Telephony.

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Comprising Telephony, American Telephone Journal, Sound Waves, Telephone Magazine and The Telephone

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H. B. McMeal, President F. S. Kenfield, 1st Vice-President
W. H. Graffis, 2d Vice-President H. D. Fargo, Secretary-Treasurer

Edited by H. B. McMeal and Franklin H. Reed

Contributing Editors

Max W. Zabel, Patent Dept. J. C. Kelsey, Financial Dept.
A. H. McMillan, Legal Dept. A. B. Smith, Technical Dept.

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CONTENTS.

Editorial 533
The Independent Long Distance Telephone Co. By J. C. Kelsey 535
Loaded Aerial Lines in Germany. By Dr. A. Ebeling.....538
A Big Convention in Texas 540
Toll Connections. By T. P. Stillwell 544
Concrete Poles. By A. E. Dobbs 545
Is Physical Connection Desirable? By D. A. Reynolds.....548
Chicago Franchise Good for Whole City 550
Letters from Observing Workers 551
Telephone Law. By A. H. McMillan 553
Telephone Finances 554
Here and There 555-556-557
From Factory and Salesroom 558
Condensed News Reports 562-563
In the Rural Line Districts 564

Will President Taft Declare Against Telephone Monopoly?

The Department of Justice is ready to open a fight on the Western Electric Company, the Bell factory, for violating the anti-trust laws of the country. So says a dispatch from Washington at the beginning of the week.

Action is to be instituted very soon against the General Electric Co., the Westinghouse Co., and the Western Electric Co., the report says, for attempting to control the business of supplying certain electrical equipment, such as motors, etc., through illegal trade agreements. This action will bring the Department of Justice squarely up against Senator Winthrop Murray Crane, and indirectly against the policy of the American Telephone & Telegraph Co. and its licensees.

It is inconceivable that the investigation can be vigorously prosecuted without leading the Department of Justice into the field of the telephone equipment business, which the Bell factory is attempting to monopolize, and thence into the business of supplying service, of which the Bell company is openly attempting to secure a monopoly, and bolster its unrighteous position in violation of the clear laws of the country by trade warfare and a press campaign, for the support of which it levies tribute on millions of telephone users.

We believe that the Department of Justice will do a great service to the nation in prosecuting a question of deepest interest to such a large proportion of the citizens. The interest is more than a pocketbook interest limited to present telephone users. It is a question of national progress. If Justice is idle, monopoly will tend to strangle telephone development where it is, and leave the people with a limited range of service of a quality no better than we now have, or perhaps inferior to it. If Justice is alert and vigorous, competition will continue to push this extraordinary quickener of the movement of upward social and business evolution into homes where it is now a luxury, or where its necessity has never been appreciated, to the resultant good of the nation.

It is the duty of those who appreciate the importance of this question to see that Washington authorities hear more than the Bell side of the question.

Telephones in National Government Buildings.

The Western Pennsylvania Independent Telephone Association brought up a subject of great interest when it urged that Independent companies be given a fair deal when appropria-

tions for telephone service for Government buildings are being distributed.

It is not that the Independent telephone companies want this small bit of Government money. What they do want is that their subscribers—users of a service supplied through local enterprise—should not be denied connection with the Government buildings. This service should not be an element of competitive warfare.

It would be just like some bigoted Democrat to say that President Taft was rewarding the disinterested political services of that sterling patriot, Senator Winthrop Murray Crane, from Massachusetts, and of the American Telephone & Telegraph Co., by bestowing federal patronage upon the Bell telephone trust. We congratulate the Pennsylvania association upon its approaching the topic on a more dignified plane, and urge that its efforts be seconded throughout the country by Independent companies exposed to the same type of discrimination.

Perfection is not gained in a day. Therefore don't become discouraged when your subscribers make complaints.

Getting Rid of Two Nuisances.

Special attention is invited to two short articles in this issue, giving views of experienced telephone managers on questions of almost national importance. These are the respective nuisances occasioned by the persons who persist in "spongeing" service without paying for it; and by the farmers who think that telephone service can be given for nothing, and that anyone who has a fence wire strung along on bean poles to a tin pan should be able to talk from the last-mentioned instrument all over the county without paying a cent to anybody.

The fact is, Mr. Galloway, of Indiana, in his campaign against service borrowers, and Mr. Strong, of Kansas, in his views on free county service, represent the positions of the men who are leading in the telephone business today. They bring up subjects on which there is a good deal of helpful discussion, and a good deal of beneficial action going on right now. And there should be more of it.

If you have a grouch against the world—or an individual—bury it. It is so much more noble to be pleasant.

Public Relations That Help the Company.

Levin J. Chase left a big express company, in whose service he had spent 20 years, to manage an electric light company at Concord, N. H. He took business methods into the new place, and they made a hit.

Mr. Chase is one of the men who has made a success as manager by leaving technical matters to competent subordinates. He seems to have had some of the right ideas on public relations before he took the job; and afterward he learned enough more to make members of the New England Section of the National Electric Light Association take considerable notice, when he read it from a paper at their convention. It is

Good Medicine for Any Public Utility Manager.

Said Mr. Chase: "I spent a great deal of time trying to fix upon the best method to pacify customers with an ancient grudge, and finally came to the conclusion that it could not be done by sitting in the office and giving them absent treatment. The more we think of such matters the worse off we are. According to the dictum of Dr. Samuel Johnson, the man who stands irresolute in a cold room trying to decide which leg he will put into his trousers first is likely to catch cold. Do something, do it graciously, and do it at an *opportune moment.* The stale slogan, 'Do it at once,' is the product of a mind that should be devoted to the instruction of parrots.

"Not long ago it became the duty of one of our men to pacify an indignant customer and he asked me whether he had better go in person, write, or have me go, and I told him that he reminded me of the story of the man who received a telegram from a distant town announcing the death of his mother-in-law. The message wound up with the question, 'Shall we embalm, cremate or bury?' Whereupon the man telegraphed back, 'All three—take no chances.'

"It should always be borne in mind that a disgruntled customer or a downright enemy furnishes fine business opportunities. If it is an old grudge, so much the better, because a convert is always more radical than the one who stays put. In our business, as in politics, the insurgent whose wounds have been dressed becomes a good citizen and an agreeable companion.

"When I looked over my field I found that one of our largest customers was our most active and vindictive enemy. His appearance at the office was always the signal for thunder, lightning and oral fireworks, and I decided to call upon him and have it out. I was warned to keep away from him, but persisted in my purpose. One of the advantages of being non-technical is that you don't know a live-wire when you see one. I was ushered into his presence, and if he was glad to see me he concealed his pleasure with entire success. After an attempt on my part to break the ice he asked me what I wanted, and I told him that it was my purpose to find out what he wanted. You may be interested to know that after a somewhat spirited conversation I unburied the instructive fact that the sole reason for this old grudge was an uncivil answer that he had received from one of our employes over the telephone. His material wants were few, as he was perfectly satisfied with the service, but he was offended by our attitude of indifference. Today that man is one of the most active friends that we possess, and all that his good will cost was a few hundred feet of copper, which is rapidly paying for itself, and some tungsten lamps to which he was clearly entitled.

"That was a typical case, and other wrinkled fronts were smoothed out in much the same way. An intelligent and friendly interest in their welfare will win the confidence of nine business men out of ten."

Truly, things are changing in the public utility business. This speech by Mr. Chase reminds us of the spirit Mr. Gary is encouraging among the men of the Gary System, in Missouri. And it's right, too.

Don't try to run your business according to the whim of every adviser—advice is the least costly commodity in existence.

The Independent Long Distance Telephone Company

A Flourishing Idaho Property—The Land of Enterprise, Optimism and Apples.

By J. C. Kelsey

The first scandal in the human family life centered about the apple.

That apple grew in Eden.

It tempted Eve.

And Adam too.

There are more varieties of apples than Heinze's famed "57 Varieties."

We have the "apple of discord."

"The apple of his eye."

"Dead Sea fruit."

Solomon sang:

"Stay me with flagons,
Comfort me with apples,
For I am sick of love."

So you see this wise old bird knew something of apples too.

But apples have grown to be a world's commercial department.

Not only that, they cure the chronic patron of the "Rum Demon."

The Ralston Health faddists gave the apple credit for containing the essential vitality necessary to health.

We are a nation of apple eaters.

The apple of Boise is a leader.

The city is not called "Boizay."

It is "Boisy"—like "noisy."

But the city is not noisy.

It is full of energy.

Boise is unusually favored.

A great hot well furnishes water for heating the city.

After expending a part of its heat for human comfort, the water passes on into the irrigating ditch, so that the live-stock drink its warmth all winter.

It is the capital city of Idaho.

A beautiful new State House is in the process of construction.

Native stone marks its beauty throughout.

The reader may remember Boise for its connection with the Heywood-Moyer trial.

These gentlemen were called "undesirable citizens" by that free user of expletives, a late occupant of the White House.

Had it not been for this interjection, the Heywood and Moyer combination might be serving Idaho, as does Harry Orchard, who, for placing the bomb at Governor Sternberg's gate, is living the simple life of a permanent guest of the State.

Listen to the story of Tom Davis, an early pioneer, and a believer in Idaho.

He planted an orchard.

He owed money,

And his mortgage became due.

His orchard was just beginning to bear.

He begged the bank for more time.

He begged for time to pick the apples of a yet unborn crop.

Great was his faith.

He held off his creditors.

That summer of 1872, Tom Davis sold every apple of a magnificent yield at 25 cents a pound.

After paying his debts, he had $40,000 in his pockets.

Truth is stranger than fiction.

I saw the great orchards.

Tom Davis's record does not stand alone.

There are no worms in Idaho apples.

They spray orchards twice a year,—

In the fall for scale,—

In the spring for the coddling moth.

Coddling moth do not take kindly to arsenate of lead, and 99½ per cent of the worm crop is nipped in the bud.

Next the orchardist gets busy on the remain ½ per cent.

The pickers look out for them.

Then the sorters go over them—

Then the packers.

Each apple is wrapped up, counted, boxed and loaded in the car.

So great is the reputation of the Boise neighborhood, that these cars of apples are sold F. O. B. Shipping Point.

The purchaser of the fruit wires the Boise bank, for instance, credit to the extent of the purchase, instructing the bank to honor drafts with bill of lading attached.

Such a community is a logical one for an Independent telephone success.

While there is no use in commenting here upon the early Bell stubbornness, and tendency to strangle the public, it is fitting to say that Boise really got a large lemon in a telephone way.

In desperation, the business men started the telephone business.

They were:

E. H. Beggs, H. C. Neal, A. J. Swain, J. S. D. Manville, Will Thrillbill, Albert Robb and Charles J. Sinsel.

Every man had a responsible walk in life.

The Bell press bureau calls this kind of men "promoters."

They were not promoters, because they put up their own money.

A promoter is one who starts enterprises with other people's money.

The Bell Press Bureau crowd may be too young to know that their own enterprise began on minority licensee stockholders' money.

The rates in Boise were placed at $1.00 a month.

No distinction between business and residence was made.

This shows the spirit of the movement,—simply one of mutual and self-help, and as near cost as possible.

Of course, rates were raised later.

This always shocks the Bell Press.

But they have raised rates, too.

It costs money to run a teelphone system.

The rates today are

Business	$48
Residence	24
Four-party residence	15
Rural	15

The growth of the system ranges as follows:

December 31, 1902	87
December 31, 1903	300
December 31, 1904	700
December 31, 1905	1,300
December 31, 1906	1,700
December 31, 1907	2,338
December 31, 1908	2,575
December 31, 1909	2,882
August 1, 1910	3,279

Today the company connects with a total of 5,500 telephones which it controls, or partially so.

It was in 1902 that the Union Pacific Railway declined the free telephone at the depot.

The action of the railroad was taken on demand of the Rocky Mountain Bell.

The U. C. Railway had a contract calling for half rates.

This accounts for the numerous passes held by Bell officials.

Talking about railroads—Idaho is weak.

I would suggest that one law be enacted, compelling a decent answer to a civil question.

When trains run six hours iate, passengers are naturally anxious.

I heard a great deal on the train, from Boise to Spokane, on the beauty of railway competition.

It is about time for this railroad to fill the magazines in defense of its natural monopoly.

In 1901, toll lines were built to Twin Springs, Idaho City, Centerville, Placerville, Quartzburg, Pearl, Spring Valley, Dry Creek, Iowa Mine and Mill.

Today the following toll stations and exchanges are connected:

Alpha,	Granite,	Nampa,
Boise,	Homedale,	Nelly Mine,
Belshazzar Mine,	Hopkins,	New Plymouth,
Caldwell,	Horseshoe Bend,	Nyssa,
Cartwrights,	Idaho City,	Osborne Mine,
Crawford,	Kentuck Mine,	Ontario,
Eldorado,	Lardo,	Parma,
Emmett,	Lincoln Mine,	Payette,
Fern,	Marsh,	Pearl,
Falks,	Meridian,	Placerville,
Fields,	Middleton,	Plowman,
Quartzburg,	Schiller,	Thunder City,
Rainbow,	Smith,	Van Wyck,
Roseberry,	Star,	Weiser.
Roswell,	Sweet,	

The company owns and operates nine exchanges.

The Boise exchange is located in a fine three-story building.

To show something of western conditions—the exchange property at Boise cost $32,000 ten years ago.

Today there is a standing offer of $65,000 for the property.

At the time the lot was bought, it seemed hopelessly out of place.

In a few years it will be the center of the city and $100,000 would not touch it.

They had some interesting rural line data.

In 1909 they had 480 cases of trouble, costing $440 to remedy.

Each case averaged $1.00 cost.

The 1909 resources are as follows:

Inventory	$430,005.90
Stock in other exchanges	6,424.00
Accounts receivable	3,261.29
Cash	3,603.32
Total	$443,339.51

The policy of the company is to charge off ten per cent annually for depreciation, and then add the actual value of the work done during the year.

1909 Liabilities:

Stock (1,976 shares)	$197,600.00
Bills payable	99,362.80
Assumed bonds	25,000.00
Bonds, 1929	11,100.00
Surplus	110,276.71
Total	$443,339.51

During 1910 the payables have been taken care of.

An obligation of $100 per station is a very reasonable one.

It certainly is $40 lower than the average Bell station.

If the Bell is to be the final standard of perfection, then Boise has something to brag of.

The annual receipts and disbursements range—

Cash income	$69,397.00
Operating cost	36,389.00
Net for reserves, interest and dividends	$33,008.00
Reserves	12,204.00
Net for interest and dividends	$20,804.00
Interest	8,809.00
Net for dividends	$11,995.00
Six per cent of $197,600	11,856.00
Surplus	$ 139.00

On a station basis, the average performance ranges:

Cash income	$25.75
Cost	13.42
Net for reserves	$12.33
Reserves	4.50

Net for interest	$ 7.83
Interest	3.25
Net for dividends	$ 4.58
Dividends	4.53
Surplus	$ .05

I have merely measured the company on a $4.50 per station renewal reserve basis.

It is a test.

Some people object to the per-station basis.

It does not matter.

The Boise property is in good condition.

The striking feature of this company lies in its personality.

Guy Clark is superintendent and is a real telephone man, always on the job.

To him directly falls the responsibility of making or breaking the company.

Judging from the company's performances, you may be sure that his work is appreciated.

Thayer Sinsel is wire chief.

F. E. Young is auditor.

C. J. Sinsel is general manager.

Twenty-one years ago a young man left his West Virginia home for the serene climate of Boise.

Mr. Sinsel is a living personification of a live wire.

He is the greatest booster alive.

And the busiest.

He is *the* Commercial Club,—

And this club is a worker's club, too.

He is authority on apples, prunes and pears.

He ships them to all parts of the world.

You will find him at every apple show.

It is wonderful, indeed, to full realize the industry, optimism and courage of the pioneer man.

The board of directors are:

C. E. Brainard,	A. J. Swain,	J. E. Tourtellotte,
E. H. Beggs,	C. J. Sinsel,	George Ellis,
George Campbell,	M. F. Albert,	J. S. D. Manville.

In the list of directors you will find J. S. D. Manville.

He has been the mainstay of the company in times of trouble.

Forty-five years ago he left Pennsylvania, shipping to Grand Island, Nebr., as a railroad hand.

Not liking the work, he paid his fare to Cheyenne, rode from Cheyenne to Golden in a spring wagon, and walked on to Central City.

With $2.75 capital, he began work and soon had a general store in Central City, over whose counters he sold from $7,000 to $12,000 worth of goods every month.

But the lure of the West was upon him, and he settled in the Boise district as an apple grower and miner.

He still has the first apple grown on his ranch.

It is preserved by cloves.

Paying $1.00 a pound for apples in Colorado, he determined to raise his own apples, and he has succeeded beyond his dreams.

On one of Mr. Sinsel's farms I saw 1,000 apple trees, 68 to the acre, and each tree, without exception, exceeded my fondest anticipation.

Jonathans, Winesaps, Ben Davis and other varieties, so common to all of us, flourish like the proverbial Green Bay tree, and render great profit to the grower.

It seems a far cry from apples to telephones.
But telephones bear a striking resemblance to whiskey.
Nothing spoils in combination with it,—
Unless it might be the man.

Boise may well be proud of its telephone company, its Commercial Club, its future and C. J. Sinsel.

MORAL: Like the individual—the city is judged by the company it keeps.

Marshalltown Business Men Refuse to Hold the Bag.

When the movement to organize a new competing company at Marshalltown, Iowa, began to gain headway, the manager of the old company saw a good chance for some of his friends holding a minority interest to unload, and get away from their Bell partner. He said that by purchasing the minority interest in the company, while the Bell continued to hold the majority, the local people could control (?) the plant. The people of Marshalltown are not paying any real money for a minority partnership with the Bell Telephone company. Here is their polite letter declining the proffered honor:

"Editor Times-Republican: Our attention has been called to a published interview with Mr. A. A. Moore, president of the Marshall Telephone company, in which he makes a tentative offer to sell the minority stock holdings of his company to the new telephone company for $30,000.

"The Merchants,' Mechanics' and Farmers' Telephone Co. will not consider the purchase of any part of the stock of the old telephone company, and among the reasons for not doing so is the fact that the new company intends building a first-class, up-to-date telephone plant and there is but little of the property of the old company that would be of value in doing so. The business and good will of the old company are not considered sufficient to be of value to the new company, but more important still is the fact that the purchase of this minority stock would in no way relieve or improve the present conditions.

"So long as the Bell company holds the controlling stock of the Marshall Telephone company there is no doubt about its dictating the policy of the company and a local management would be in control only so far as they inflicted this policy upon the public and no further. We are seeking relief from the Bell company, not the burdens of their local stockholders. Our company is progressing nicely, the stock is being readily subscribed, and we are going to build a telephone plant for the people and by the people of Marshall county, that will satisfy our telephone needs and there will be no Bell strings on it.

(Signed) "Merchants,' Mechanics' and Farmers' Telephone Co. Per committee."

Pennsylvania Injunction Grows Out of Connection Relations.

The North East Independent Telephone Company of North East, Pa., has both Bell and Independent toll lines on its board, and claims to route business over them impartially. The American Union (Independent) company decided to cut off its long distance service from the North East board on October 31. Upon notification of its intention being served upon the North East Company the latter obtained a temporary injunction preventing disconnection until the case can be heard. The case will come up in from 15 to 30 days.

Loaded Aerial Lines in Germany*

By Dr. A. Ebeling

Translated from the German Text by Franklin H. Reed.

The Bi-Metallic Line from Berlin to Stralsund.—After the good practical results obtained by the use of the coils upon the line from Berlin to Frankfort on the Main, the Post Office Administration decided to make a further experiment, namely, the introduction of the coils in a bi-metallic line, that is, in a line made of wire consisting of an iron center surrounded by copper. This trial was made upon the line extending from Berlin to Stralsund, of which the length is about 240 kilometers, and which is composed of a bi-metallic wire 4 mm. in diameter. The coils employed here were mounted at intervals of 4 kilometers. They were protected by vessels of porcelain in the form shown in Fig. 9, at the right, while the form of the lightning arresters was the same as previously used. This new form of coil containing vessel was adopted because the equipment of the Berlin-Frankfort line was not free from objections from the mechanical point of view. The ebonite bushings for the entering wires were frequently broken while the apparatus was being installed on the poles. The coils had annular iron

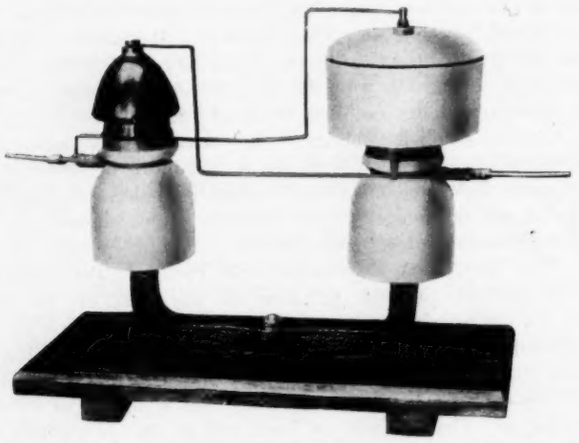


Fig. 9.—Lightning Arrester at Left, and Case for Single Coil at the Right. Type Used on Berlin-Stralsund Line.

cores. Fig. 10 shows this new form of equipment, installed on a pole.

This line, likewise, showed a considerable improvement in the volume of speech after the installation of the coils. This was confirmed by the measurements taken with the dynamometer before and after the insertion of the coils in the line. As these measurements were not extremely exact, their results are not presented.

Bi-Metallic Line from Hamburg to Koenigsberg.—The line from Hamburg to Königsberg, which is about 920 kilometers long, and is composed of a bi-metallic wire of 5 mm. diameter was also equipped with coils. The apparatus used had the same form as that of the Berlin-Stralsund line. The performance of this line without coils might be considered as equivalent, approximately, to that of a line of 3 mm. bronze wire. With the exception of a few short sections this line runs along the railroad upon the same poles as a very large number of telegraph wires of the Post Office and of the railways belonging to the State of Prussia. The telegraph service is conducted with instruments of the most divers types, such as the Morse, Hughes, Wheatstone, etc. For a distance of about 200 kilometers this line was parallel to a line operated by the Siemens rapid telegraph system, which was being tried out between Königsberg and Berlin.

When the line was equipped with the coils, rather loud induction noises were set up by the action of the telegraph lines running parallel to it upon the same poles. Attempts were made, upon a section of the line, to diminish these noises by systematic transposition. These experiments gave good results. Consequently the entire line was afterward transposed, once in each kilometer, and again every 500 meters. However, when the entire line had been thus transposed the noises had not completely subsided. It was noticed that the soldered joints between the entering wires of the coil and the bi-metallic wire were not perfect in every case. These joints were rather difficult to make because the bi-metallic wire was stiff and not easily handled. As soon as these faults had been eradicated the noises diminished notably, but nevertheless they did not completely disappear.

It was then a question of finding out which were the telegraph lines which produced this trouble, or which were the cause of most of the noise. To accomplish this experiments were made in stopping and resuming service at predetermined times over the telegraph lines of the Post Office. The observations were as follows: The Morse lines produced no perceptible disturbances; the Hughes lines produced perceptible disturbances; but it was the Wheatstone lines which gave the greatest trouble. The Siemens system likewise produced disturbances on account of its high frequency. But it was established clearly that these were not sensible except in the vicinity of the telegraphic transmitter, that is to say, for example, that the disturbances due to induction were produced most strongly at Hamburg when telegraph messages were being sent from Hamburg to Sweden by the Wheatstone line, while the currents proceeding from Sweden to Hamburg made no trouble. It was sufficient then that each telephone exchange should take measures to protect itself against the disturbances set up by its own telegraph transmission.

To diminish these troublesome noises there was already known a method which was likewise employed here. This plan consists of adding an inductance to the telegraphic line producing the disturbances; the amount of this inductance necessarily being suited to the particular line to which it was applied. The function of the inductance is to modify the wave shape of the current in the telegraph line. It is especially the high points of the telegraphic waves which act by induction, but they are considerably rounded little by little on the line so that they make themselves felt less and less as the distance increases from the transmitting end.

By introducing such inductances in the telegraph lines it has been possible, when the insulation of the telephone line was normal, to even diminish the disturbance produced by the Wheatstone lines to such a point that the noise produced by a line could be observed only when it was known by the observer that the Wheatstone line in question was actually in operation. As for the Hughes lines it was no longer possible to perceive any disturbances produced by these lines after the insertion of the reactance coils; but when these coils were cut out of circuit the noise would become perceptible again. It was likewise impossible to observe any effect of induction from the Siemens rapid telephone line after the installation of the reactance coils.

However, the plan which consists of adding an inductance to the troublesome telegraph line does not give a perfect re-

*Abstract of a paper presented May 26, 1909, before the Elektrotechnische Verein, Germany. Continued from the issue of Oct. 15, 1910.

sult when the telephone line is disturbed by faults in insulation or contacts. But then such noises are produced also in ordinary telephone lines parallel to telegraph lines carried on the same poles upon which are operated Hughes or Wheatstone sets.

It is not astonishing that Pupinized (loaded) lines should be more sensible to induction than an unloaded line in which the wire has the same diameter, because the transmission power of the line is increased by the use of the coils. But in accordance with the observations made by the Minister of Commerce of Austria upon the sensibility of aerial lines equipped with simple loading coils, this is doubtless not the principal reason for the increase in the sensibility. The real reason is probably that the telephone lines are by themselves very sensitive to disarrangements of symmetry. The simple coils used were built as uniform as possible, but the modifications to which they

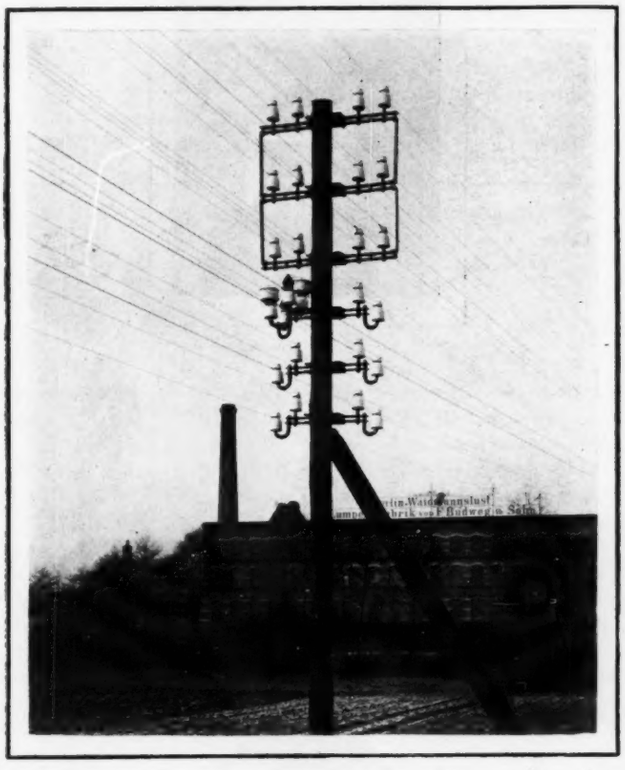


Fig. 10.—Equipment for Simple Coils, Actually Installed on Berlin-Stralsund Line.

were exposed by the atmospheric discharges might be different for the two respective wires, which would destroy the symmetry. It is very probable that such different disarrangements would be produced upon the coils. This, at least, is indicated by the measurements made by the Minister of Commerce of Austria upon coils taken from an overhead line (loaded) equipped with the same type of coils as the line from Hamburg to Königsberg. By using double coils one would probably have suppressed, or at the very least greatly diminished the peculiar sensitiveness of the line to telegraph noises. But it was not certain whether the bi-metallic line would not, none the less, cause difficulties on account of the peculiarities of the materials, the more so as the number of disturbing telegraph lines, that is to say the lines operated on Hughes and Wheatstone systems, carried upon the same poles, was very large, and it was desired to avoid complicating the telegraph system by reactance coils. A determination was therefore reached to take out the coils inserted in the line without making further experiments. The volume of transmission had naturally been considerably increased upon the line from Hamburg to Königsberg by the use of the coils.

Line from Berlin to Frankfort on the Main. Second Equipment.—As the original equipment mounted on the line from Berlin to Frankfort on the Main had not sufficient durability, as has already been mentioned, although the quality of the transmission had not suffered from it, the Siemens & Halske Co. decided, none the less, to replace the coils by those enclosed in porcelain pots, which were then believed to be the most perfect from a mechanical point of view. As the line lent itself admirably to theoretical experiments on account of the lines existing for comparison, it was desired at the same time to profit from the occasion, by investigating, in a more exact manner, to just what extent theoretical values are in agreement with practical values in loaded aerial lines. By using appropriate coils it was proposed to make the Pupin loaded line of 2½ mm. bronze equivalent for transmission to an ordinary bronze wire of 5 mm. With the first equipment it had simply been possible to establish that, in relation to the intensity of the sound, the loaded line had its equivalent between the ordinary 4 mm. bronze line and that of 5 mm. As the transmission capability corresponds approximately to the cross section of the wire it signifies that the experimental line, with a transmission power of $2.5^2=6.25$, might be advanced by the use of coils to a power between $4^2=16$ and $5^2=25$; but these limits were so far separated that it was desirable to bring them closer together. The talking experiments which were made after the change of the coils showed that the results were improved, as had been expected. Nevertheless, it was observed at the same time that the lines showed several disturbances, of which the causes were determined by careful investigation. It was found that the equipment did not resist great changes in temperature. During the different periods of extreme cold occurring in the winters of 1906 and 1907, a great number of the porcelain caps had jumped off, which had allowed moisture to enter and produce imperfections in the contacts.

(To be concluded.)

Joint Liability of Electric Light and Telephone Company.

The joint liability for the diversion of a high voltage electric current due to the falling of a telephone wire across an electric light wire was sustained in an interesting decision and radical language by the Indiana Appellate Court, October 24, in the case of Dalby against the Indiana Light and Heat Co., and the Indianapolis Telephone Co.

Edward Dalby, a policeman on the Indianapolis force, was instantly killed by an electric shock while reporting to the patrol station from a patrol box. The box had become charged with electricity from a wire of the Indiana Light and Heat Company across which a telephone wire had fallen during a storm, and when the policeman inserted his key into the box he received a current at three thousand volts and fell back dead. Suit was brought by his widow.

The defendant companies insisted that there was no evidence to show that they had been negligent; that no one witnessed the accident and that the cause of the killing was one of presumption. The trial court gave judgment for $3,312.50, and on appeal sustaining the verdict Judge Robey said: "The owner of a ferocious tiger is bound to confine it, and when it escapes and kills, he is responsible. The high electric current is more deadly than any tiger. It kills by a touch, and its presence is only discovered when the danger has been done, so that those who generate such currents ought, on principle, to be made insures against damages thereby done. While perhaps the authorities do not go that far in respect to generating and transmission companies, yet for the purpose of this decision it is enough to hold that the facts make a prima facie case of negligence on the part of the companies rendering them jointly liable."

A Big Convention in Texas

Texas has done itself proud in its "revival" convention, the first state convention to be held this fall. There are big things moving in the state, and more than ever the Independent Telephone Association will be a live factor in securing better conditions for local and long distance business. The affairs of the association for the coming year will be in the hands of the following strong board of officers:

President, J. C. Casler, Dallas; first vice-president, C. A. Pike, Fort Worth; second vice-president, W. E. Osborne, Cleburne; third vice-president, F. E. Ebersole, Houston; fourth vice-president, A. J. Coombs, Haskell; secretary, Leon Spencer, Gainesville (re-elected); treasurer, R. M. Webb, Colorado (re-elected).

The convention had an auspicious opening, Oct. 26, due

Mr. J. C. Casler, the New President.

to its being held in the new building which is to be equipped as a central office by the new Independent company at Dallas. President Chamberlain opened the meeting by reading part of a paper by J. B. Ware, secretary of the National Association, which had been published in "The Transmitter." After reciting some facts from his store of telephone historical data, Mr. Ware, in this paper, calls attention to the great progress which has been made by Independent plants in states that are well organized, and the comparative lack of progress where there is no organization, or only a weak one.

President Chamberlain then read a letter of greeting from Mr. Ware. The following is part of this letter from the *Secretary of the National Association*:

"You have the men and the means, or can get them, to complete, and soon, a great, well-developed, successful telephone system, having many miles of long distance lines and doing an unprecedented long distance business, and with its many adequately developed exchanges furnishing mod-

Mr. F. E. Ebersole.

ern and very profitable service to added thousands of satisfied patrons, all loyal friends and allies of your Independent companies.

'The telephone, when once enjoyed, becomes a necessity. No other utility has as certain income or one so permanent and unvarying.

"With your state organized into districts and your association properly supported financially to enable your having one or more active men in the field, you would then get the districts organized and active in their own behalf; you would attract local and also outside capital, with corresponding development and benefit to all; in place of slow

Mr. J. B. Earle.

development, discouragement and possibly doubt, you would have activity, prosperity and ascendency.

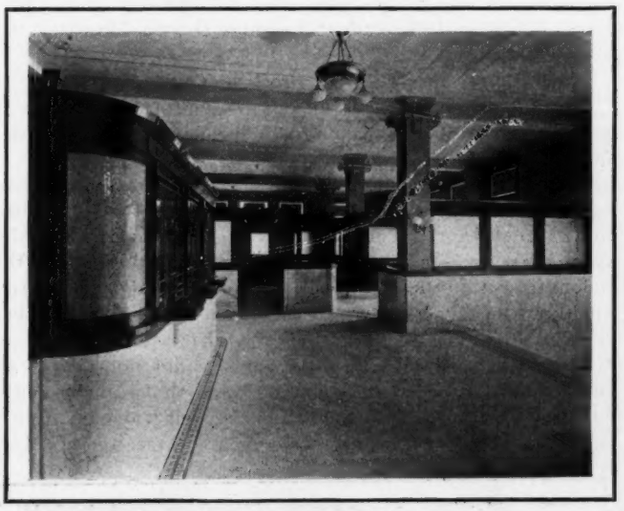
"The National Association is urging the enforcement of state laws against those who violate them to the detriment of the telephone business and the telephone users. The states of Mississippi, Kansas, Nebraska and Michigan have recently begun suits against the licensee Bell companies

operating in them, for willful and open violations of their laws. Apparently the unfair methods of the Bell companies against their legitimate and successful competitors must soon cease and such proper conditions and methods of business prevail in the commercial telephone field as are commonly found in the business world. These results, apparently, can be obtained solely through the efforts of the National organization. Therefore the necessity of our association and its advancement needs no argument. The results sought are of common benefit to your Texas companies, as to those of Nebraska or Michigan."

Address of President Chamberlain.

Hon. E. M. Chamberlain spoke in his usual cheerful vein, brightening hard-headed business sense with strokes of wit that have made him a reputation as one of the most genial as well as capable men in the telephone business. He said, in part:

"Every telephone exchange in this state needs a man at the head of it and in every department, who loves his work and is eager to see the business prosper. This association needs officers and members, who have the interest of the association at heart and who are eager to labor in its behalf. They should love the work in building up the



View in the Lobby of the Handsome New Telephone Building at Dallas.

association very much as the girl loved the boy, as exemplified in the chorus of a song which was given as an answer by the girl to the boy's playful request: 'Tell me when you love me best?' Her reply being,

"'I love you when the sun shines,
I love you when it rains,
I love you all the night, love,
And I love you all the day,
No other heart can carry
Such precious love as mine.
I can't tell when I love you best,
For I love you all the time.'

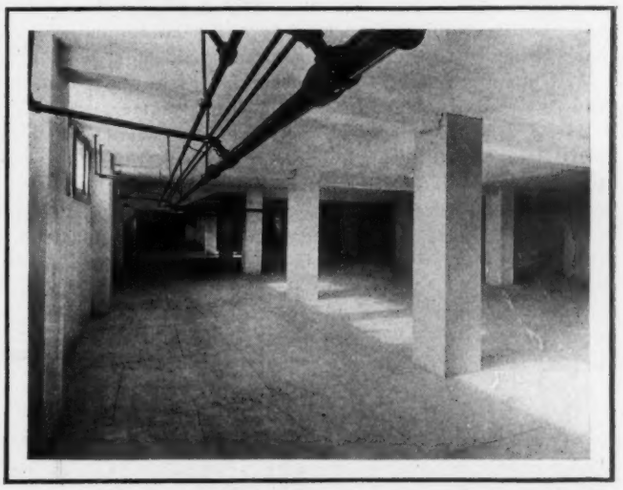
"A man with such devotion as that at the head of our association and with time to give it his attention, who possesses honesty and ability would soon push this association to the front ranks and make it second to no other state organization.

"What is the purpose of this association? It is to promote the interest of its members. How is this being done? By the exchange of ideas regarding management, management of employes, management of equipment, management of the public, and also of competition, and as regards the latter we have an interesting, yet complex, proposition, complex in as much as it varies with the latitude and longitude of our country.

"No word appeals more strongly to us than the word loyalty. We all love to be spoken of as loyal to our family, friends, country, our ideals, etc. And I would like to see every Independent stockholder and manager in Texas a

Big Switchroom, where Equipment for Local Service will be Installed in the New Dallas Independent Exchange.

loyal member of this association and every member a worker. The past year has been an off year so far as legislation is concerned, and I have felt that the greatest need of this association was to have three interesting district meetings and a rousing state gathering, and to save up money in the treasury and I think we have more on hand than at any other time. In times of peace prepare for war. This coming together creates a fraternal feeling and a sense of obligation, one to another, that greatly stimulates confidence, and a lack of confidence is the greatest barrier which confronts the average Independent telephone industry. One of his greatest fears is that some neighboring telephone man will not prove loyal, but disregard his obligations and sell to, or connect up with the competing com-



The Basement of the Independent Telephone Building, Dallas—Ideal Quarters for Material Storage.

pany and thus break his connections. Our association, together with the Knights of the Shield, can and should do much to increase this sense of obligation and create greater loyalty. Brothers, can we afford not to be loyal? Proper organization and education will control all this as well as many other matters, and I be-

speak for the Independents, as sweeping victories in the future as in the past. To those (if there be any) who think the association of but little consequence to them I would call their attention to our national secretary's article in "The Transmitter" (quoted above) wherein he clearly sets forth the fact that but for organization you today might

Second Floor, Independent Telephone Building, Dallas, Where Toll Boards will be Installed.

not, nor could not, have been engaged in the telephone business.

"In times of peace, prepare for war."

"Our National motto is: 'Each for all and all for each.'

"Our motto: 'We lead, others follow.'"

Mr. Chamberlain urged more strict constitutional provisions compelling the payment of dues, and missionary work to bring in new members.

Secretary and Treasurer's Report.

A proposition to change the voting plan of the association was advanced by Secretary Leon Spencer as follows:

"I think that each member should have votes equal to the amount of dues each pays. For instance, if one party pays $50 a year into the association he should have fifty votes. If another party pays $20 as yearly dues, he should have twenty votes, and so on. In that way each company would have influence to the extent of money paid in."

Mr. Spencer recited his experiences in making collections, and reported a balance of about $360 in the treasury.

Mr. J. B. Earle, of Waco, was appointed chairman of the legislative committee, with power to select other members to aid him. Mr. Earle spoke vigorously on the need of organized effort on the part of every Independent company in the state, whether a member of the association or not, to confer with the members of the legislature and senate in every part of the state and lay before them the exact situation. Later on in the meeting Mr. Earle set forth what is needed to make the legislative committee a success in its work.

"Thoughtful Boosters and Thoughtless Knockers."

Mr. T. A. Gould, speaking on this subject, said:

"Texas has, at a very conservative estimate, five hundred Independent telephone companies, composed of more than five times that number of stockholders, with substantial investments in the enterprise. If each one of this number would lend his assistance to further the objects of the association and contribute a dollar membership fee toward defraying the expense this item in itself would give us a power and a prestige.

"Then the dues paid in by all telephone companies of two and a half cents per telephone, and the same for each pole mile of long distance lines would enable us to combat our opponents so forcibly that the Boston Press Bureaus would look like three Mexican dimes to the reading public of the good old Lone Star State.

"Let every true and faithful Independent come out into the open and assist in fighting the battle for our rights.

"Remember that competition is the one and only way to regulate the telephone business, and as we are all in the business of furnishing competition by giving good and reliable telephone service, and since we all have the same competition, it behooves us to stand together.

Remember the frailties of human nature, and how easy it is for our friends and patrons (as well as ourselves), to be misled by the misrepresentations of the foxy literature and oily tongues of that one would-be universal system, spending millions of dollars in a multiplicity of magazines and papers to advocate their system.

"Let a thousand Independent telephone men of Texas identify themselves with this association and our success would be assured. The world would realize that the men with the means and ability are prepared to wage the battle. Our rights would then be respected, our interests protected and our property safe-guarded from the clutches of the greatest monopoly of modern times.

"Be a booster; join the boosters; do your share toward boosting for the association, offer all possible encouragement for your Independent neighbor to do likewise, and keep eternally at it."

Short Talks on Practical Topics.

Ten minute talks brought out live information from a number of members. Among the speakers and their statements were the following:

C. W. Emmer, Beaumont: At Beaumont the Independent company has given such excellent service that if it had means to still further develop its system, it could practically have every subscriber in town. It is very popular in the business section, having about fifty per cent more subscribers than the Southwestern Telegraph & Telephone Co., but the Southwestern, on the other hand, has a big majority of the residence section. If his company did not charge an initial installation fee of $1 in addition to the regular monthly service charge, Mr. Emmer believed his company would have over 2,000 subscribers. The business rate of the Inde-

Cashier's Office in the New Exchange at Dallas, Texas, Soon to be Equipped.

pendent company is $3 a month and of the Bell system $4. The Beaumont Telephone Co., when it is in financial position to do so, will make extensions and improvements which it hopes will enable it to gain the subscription list it aspires to.

W. P. Johnson, Corsicana: The stockholders of his company, who are few in number, agreed to turn all dividends

back into the company for the purpose of making improvements and extensions rather than ask for outside capital. The worst trouble with which his company had to contend was the low rates paid for service and that up to the present time the stockholders had not felt justified in raising them. His exchange has extensive rural connections and does an excellent business from that standpoint.

Mr. Emmer spoke a few words in favor of physical connection of competing exchanges. No general discussion of this subject took place on the convention floor, although President Chamberlain had mentioned it as a matter of importance.

J. B. Earle, Waco: The story of the remarkable growth of his company was an inspiration to the other delegates. It has successfully acquired the upper hand in Waco and has regularly paid a quarterly dividend. The company has plans for still further bettering its service and properties which will be put into execution before long. Raising the price of monthly service would enable the companies to make more money, and in that way give more attractive propositions for investment of capital.

Mr. Earle also gave an account of what he considered the best manner in which to handle the legislative work of the association—a subject in which he is an authority and leader..

Aaron Smith, Editor of "The Transmitter," spoke a few words on "Co-operation" which gave the members a chance to testify the love and esteem in which this sterling "Booster" for Independent telephony is held.

Experience of an Ex-Sublicensee.

Mr. Webb, who had once been a sublicensee of the Bell, and had his connections cut off, said that he would admit he felt downcast when he first received this notice, that on a certain date all his lines would be disconnected from Bell service. But there was no use to moan about it, so his company set to work to remedy the defect as much as could be, and they progressed so satisfactorily without the Bell connection that he doubted if they would contemplate any future connection.

Mr. Webb advocated frequent district meetings, which he felt confident would do much to gain new members to the association and help organize to extend toll lines.

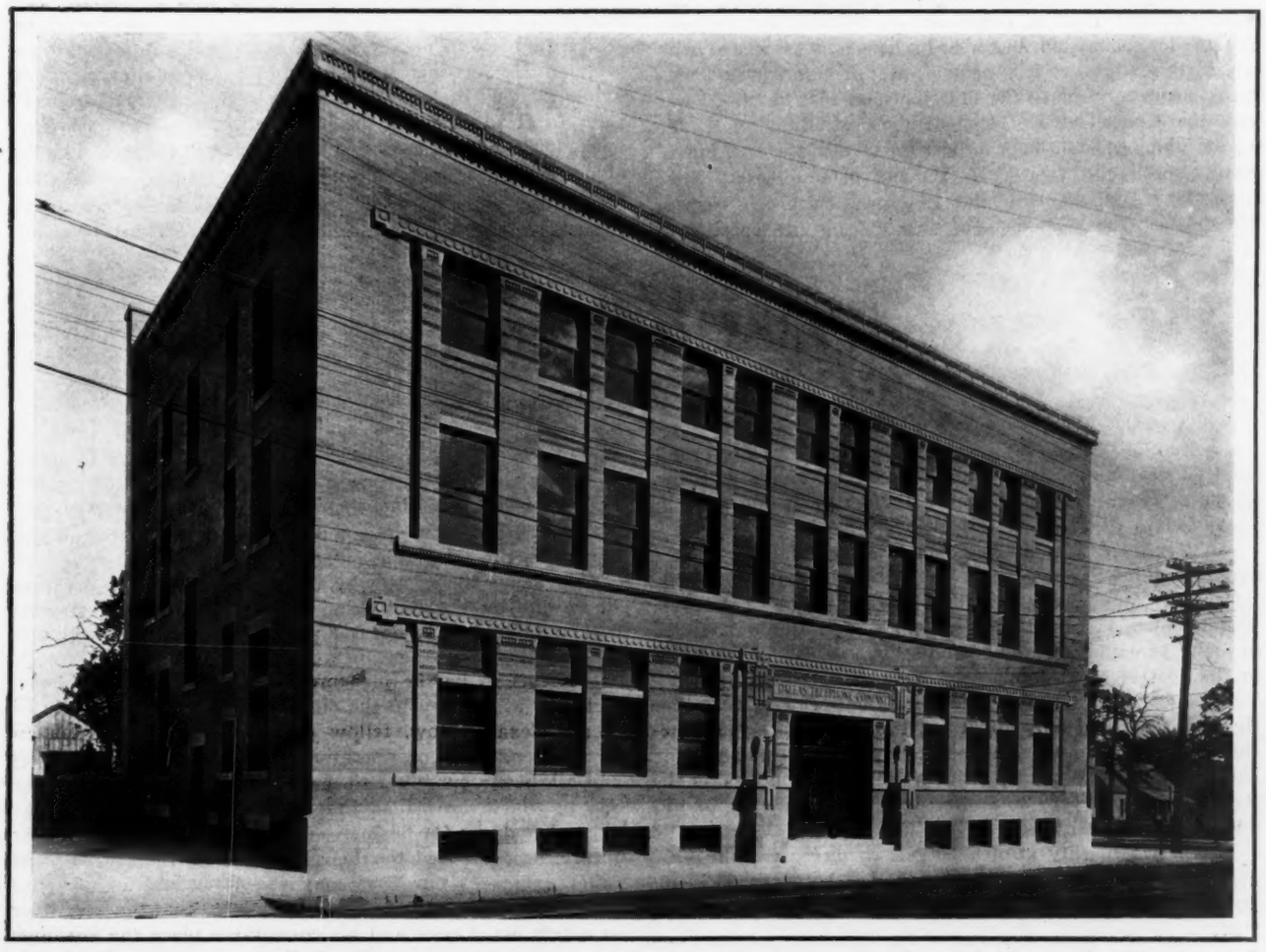
He also advocated some method by which Independent companies, who through force of circumstances were sublicensees of the Bell system, could become members of the association. The association voted to allow this, provided every sub-licensee of the Bell system who applied for membership in the association should first have his application approved by the executive committee.

Taxation.

Mr. J. B. Earle, of Waco, gave the members a strong review of the injustice of this system. His views are based upon thorough study, and the members would do well to join him in a well-planned movement to secure a fairer and less burdensome taxation system.

"Knights of the Shield."

Torch lights failed to illumine the mystery behind the sacred veil thrown about this famous young organization. Suffice it to say that the telephation of A. A. Burch, of Chicago, with the Automatic Electric Co., will be long remembered in Texas. Other new Knights are: J. R. Bailey, Hillsboro Telephone Co., Hillsboro; C. W. Emmer, manager Beaumont Telephone



New Independent Telephone Building, Dallas—A Big Cause of Convention Enthusiasm.

Co., Beaumont; A. A. Seigler, manager Blue Ridge Telephone Co., Blue Ridge; R. E. Carrington, auditor South Texas Telephone Co., Austin; F. E. Ebersole, Houston Home Telephone Co., Houston; Thos. H. Harris, salesman, Wesco Supply Co., Fort Worth; W. P. Johnson, manager Corsicana Telephone Co., Corsicana; A. E. Dobbs, Greenville; Robt. Shelley, general manager South Texas Telephone Co., Austin; Paul Ehlers, Houston Home Telephone Co., Houston; Geo. Wilson, Monarch Telephone Manufacturing Co., Dallas; L. M. Landa, Houston Home Telephone Co., Houston; L. H. Fuller, Tel-Electric Co., Houston; C. P. Lord, manager The Gamer Co., Fort Worth; E. G. Kathcart, Electric Appliance Co., Dallas; J. B. Earle, North Texas Telephone Co., Waco.

The New President.

Mr. J. C. Casler was born in Delta, Fulton Co., Ohio, 35 years ago, and attended Delta Public School until 13 years of age. He was then sent to Michigan to high school, left high school at the age of 15 and returned to Toledo, Ohio, and went to work in a wholesale dry goods house and attended night business college for three years, then secured a traveling position for a manufacturing company, in Findlay, Ohio, which position he held until entering the telephone business three years later.

At the age of 21 he accepted a position with the Michigan Bell Telephone Co., in the contract department. After a study of the telephone situation he decided to cast his lot with the Independents and accepted a position in the contract department of the Everett-Moore Syndicate, of Cleveland, Ohio. He assisted in the development of a number of their largest and most important exchanges, such as Cleveland, Dayton and Mansfield, Ohio.

In January, 1901, Mr. Casler organized the Independent Telephone Contract Co., an organization created for the purpose of developing old and new exchanges. Associated with him in this work were a number of the best contract men in the business. Among the first contracts that he closed was with the Consolidated Telephone Co., of Buffalo, N. Y., and he developed telephone properties in the cities of Jamestown, Geneva and Ithaca, N. Y., and many others. Later he made a contract with the Keystone Telephone Co., of Philadelphia, and did splendid work during the opening of west Philadelphia exchanges. In 1903 he became associated with financial men of Wilkesbarre and Scranton, Pa., and assisted in promoting and developing a telephone system in Auburn, N. Y.

In August, 1905, Mr. Casler was sent to Ft. Worth, Texas, representing the interests of the Pennsylvania bond holders. In December, 1905, he was elected general manager of the Ft. Worth Telephone Co. Later he promoted and built the long distance lines around Ft. Worth, and rebuit the Home Telephone Co., of Weatherford, Texas, and several other small plants.

In April, 1906, at a meeting of the Texas Independent Telephone Association held in Waco, Mr. Casler was unanimously elected president of the Association. During his term he was very successful in building up that organization. In December, 1907, he assisted in securing a telephone franchise in the city of Dallas from the Board of City Commissioners. This franchise was secured for the Southern Telephone-Electric Co. The opposition carried the franchise question to a vote of the people. Mr. Casler managed the campaign and won the franchise by a vote of more than 2 to 1.

Owing to the financial stringency at that time the Southern Telephone-Electric Co. was unable to finance its Dallas proposition. In October, 1908, Mr. Casler purchased the Dallas franchise from the Southern Telephone-Electric Co., and he and his associates are now constructing an automatic system in the city of Dallas which will cost approximately $1,500,000. They expect to be ready to give service to 10,000 subscribers early in the fall of 1911. Mr. Casler is vice-president and general manager of the company.

On October 26 and 27, last week, a meeting of the Texas Independent Telephone Association was held in Dallas. Although Mr. Casler declined the nomination he was forced to accept the office of president by a unanimous vote of the convention. He was one of the organizers and charter members of the Knights of the Shield and was elected Grand Inductivator, or Head Official at the first meeting, which was held October, 1909, and was re-elected to that office at the second annual meeting held October 26, 1910. It is largely through Mr. Casler's efforts that this social organization is meeting with such great success.

Toll Connections*

By T. P. Stillwell

I believe all will agree with me that the greatest and most general handicap to the attainment of a larger degree of success in the Independent exchange operating field in Texas is lack of adequate toll connections.

Can't you see how much depends on good toll connections? I think I am stating the facts very conservatively if I say the money that has gone into the pouch of the Bell octopus over the Southwestern lines from the territories of many of us during this cotton season would pay one-half of the cost of good copper toll lines in our territories.

Statistics given out at our last state convention were that the Bell trust had only about ten thousand more than one-third of the telephones in operation in Texas, and yet the Independents with nearly twice as many telephones as the Bell have only a very small per cent of the mileage of toll lines that the Bell has.

When two mighty armies go out to do battle, the wise general seeks to fortify his lines, and if he succeeds in intrenching his forces behind good breastworks, he laughs in derision at the attempts of superior numbers to drive him from the field with no intrenchments.

There is no disputing that good toll lines pay a greater per cent of profit on the amount of the investment than any branch of the telephone industry.

This being the case, why do we Inuependent operators sit by and let the Bell skim the cream of the industry by monopoly of toll business and content ourselves with the skim milk of exchange operating?

It seems to be the idea prevalent that Dallas has been, and is now, the key to the situation in Texas, especially of North Texas. Now, fellow craftsmen, that Dallas is an assured Independent operating point, should we not, one and all, bestir ourselves to make ready and say that on the day in which the Dallas Independent Telephone Exchange opens her doors for business, which will be in the very near future, as evidenced by this magnificent structure, and the other evidences our eyes may see about us, to have our arrangements so perfected and completed that the very hour in which Mr. Casler and his co-workers place the keystone in position by opening the Dallas exchange to the public,

*Abstract of a paper presented at the convention of the Texas Independent Telephone Association, Oct. 26, 1910.

we shall march triumphantly through its arch into the accomplished fulfillment of our so long cherished hopes? General good service and toll connections between all Independent telephone exchanges in territory tributary or adjacent thereto.

Why not have arrangements made and the work so completed that we may sit in our respective offices and congratulate Mr. Casler and welcome Dallas into the ranks of Independent telephony in Texas and felicitate our fellow workers on the bright future assured to us by this event?

Let us be ready to send out currents of telephone business from the capillaries of our business firm patrons' offices, through the veins of our Independent operating exchanges along the arteries of our good copper toll lines into the heart of North Texas.

It is said "Opportunity knocks once at every one's door." Is Opportunity now knocking at the door of Independent telephony in North Texas?

Will we shut the door in its face by idly waiting for someone else to do what we should do ourselves and help to do what we know we so much need to have done?

We should realize that toll connections do not sprout spontaneously out from exchanges, and grow until they reach other exchanges. But that they have to be planned and builded; it takes energetic and co-operative work of exchange owners interested and affected working in connection with a long distance head building and operating company or organization.

Now, fellow operators, let us all, both small and great, bestir ourselves here and now to see to it and to know of a certainty that such arrangements are begun and pushed ro completion and execution on some plan agreeable to all and loyally supported by all.

I would suggest the idea of long distance companies being organized in continuous sections and all operating exchanges taking stock in them in proportion to the number of units they operate, and thus binding ourselves together to support our enterprises and be governed by the rules of the long distance operating company, thus making a community of interests, and as one of our esteemed ex-secretaries said, binding ourselves together with bonds of copper.

Concrete Poles*

By A. E. Dobbs

The constantly increasing scarcity of good pole timber, together with its constantly advancing price, has led many builders to search for a substitute that would be equally available in all parts of the country, reasonably cheap and possibly more durable in service. The best poles we have are Michigan cedar and chestnut, which, in the cool climate to which they are best suited, may last about twenty years. But unless creosoted their term of usefulness in Southern climates is much shorter.

There are also some objections to wooden poles; very few of them are straight to begin with, and any unusual weight or side strain will cause them to buckle, warp and pull over, thus rendering the line unsightly; rain and sun conspire to crack them from bottom to top, lightning takes its toll every season; decay sets in at the ground line and sap rot in the rest of the pole as soon as they are erected, while numerous lawsuits against pole companies for falling poles show that ordinary inspection does not always reveal the full extent of natural disintegration.

Advantages of Concrete Poles.

Cement material and cement factories are now to be found in almost every state and territory in the Union. Cement at the present time is quite cheap and concrete is proof against decay, fire, heat, water, woodpeckers, insects, fungus growths, cribbing horses, sign tackers, or even runaway autos. It is, when reinforced, lightning proof and to a great extent fool proof, for boys will soon tire of trying to climb concrete poles. When, in addition to all this, we consider that they are straight and sightly and will be better twenty years from now than when first set, they would seem to be cheap even though they cost four times as much as wooden poles.

All poles can be moulded any shape desired, as round, square, octagonal, triangular or hexagonal; all of the same size and shape, can be made any length desired, and when set are all in perfect alignment. They will also carry much greater weights than wooden poles, will bend further than a wooden pole without breaking and have elasticity enough to yield considerably to sudden strains without losing shape, while their resistance to strain is nearly twice that of cedar. Thus a thirty-foot pole will yield about two feet at the top and spring back into place when the strain is removed.

Now a word as to

Pole Strain.

A well constructed line should not be subjected to any but vertical stresses, as all terminal and heavy side strains should be taken up by anchors and guys properly placed. Every lineman well knows that a side strain of 100 pounds will pull even quite well planted poles out of line and the man who pulls even house drops very tight will soon have a disreputable looking pole line. Wires and cable spans should be pulled from one anchored terminal to another so that the only strain against the top of the pole is the downward weight of wires and cables. By following this plan your work will always be sightly and "trouble shooting" be reduced to a minimum.

In the holding of downward strains, concrete cannot be excelled even by white oak posts. Anchor strains, however, should be taken care of by special appliances.

Concrete Mixtures and Treatment.

Concrete is composed fundamentally of Portland cement, which is used as a binder for other and harder materials, as sand, rock or slag, and is used in varying proportions according to the kind and size of the other ingredients. Sand is added to the mixture in order to create the greater hardness and save the amount of cement used. Broken stone or gravel is also employed for the same purpose, while in reinforced structures steel rods are added in order to give greater tensile strength and elasticity. Where gravel or broken stone is used, sand is also employed to fill in the spaces and make solid body. Most engineers prefer broken stone or chat to gravel on the grounds that the rough surface of broken stone gives the cement greater clinging power; while the advocates of gravel contend that as the pebbles are harder than ordinary chat or stone, the ultimate result will be better and that closer packing will result in a more solid body, as the cement will cling to pebbles as well as broken stone. While there is much to be said on both sides, all agree that the stone or gravel, as well as the sand, should be free from clay or other earth mixtures, so that it is often necessary to specify washed

*Abstract of a paper read before the Texas Independent Telephone Association, Dallas, October 26, 1910.

sand and gravel. In poles, only sand, small gravel or finely crushed stone known as "chat" need to be considered.

Formulas vary, but one general formula covers them all, namely:

The proportions of sand, chat and cement shall be such that all spaces shall be filled and every particle of sand or stone shall be well covered with a cement coating. When this is strictly adhered to the structure is as strong as it can be made, for, regarding the cement as a binder, only, every particle of sand and stone covered with even a thin coating of cement adheres strongly to its neighbor and you can get no more by increasing the proportion of cement.

Thus, in a case where sand only is used, a proportion of one part cement and four parts sand makes the strongest possible mixture. Where chat is obtainable the following formula used by one company making concrete poles has been found thoroughly reliable:

1 sack cement (100 lbs.).
2 wheelbarrows chat.
3 wheelbarrows sand.

This makes one sack of cement extend to about six times its original bulk. Other formulas are sometimes given, but the above two will be the only ones considered in this paper.

Quick Handling Necessary.

Unless the handling of cement is well understood it is better to employ some thoroughly competent cement man, for in every case where good cement mixtures have proven unsatisfactory it can be traced to ignorance of its qualities or improper manipulation.

There are two methods of applying water to cement which produce what are commonly called "wet" or "dry" mixtures and methods of treatment are not exactly the same. In the wet method enough water is added to make a mixture about the consistency of mortar. There should not be too much water as in that case the cement will float to the top while the sand and chat settle to the bottom, which will result in weak spots in the finished product. The sand, chat and cement should be thoroughly mixed while dry either by being turned several times with shovels or in a mixing machine. When well mixed, water should be added and the mixture placed in the mold or form as rapidly as possible, as cement begins to crystallize, or set within ten minutes and once it begins to set it cannot be used and the batch will have to be thrown away. Once in the mold it should not be disturbed until it has hardened.

The so-called dry mixture contains just enough water, sprinkled on, to hold it together; it does not require such swift handling as the wet mortar, but at the same time it should not lay around long. It is used a great deal in building blocks and in those forms where the mold is taken down immediately. The difference between wet and dry may be summarized as follows:

1. The wet mixture crystallizes more quickly and makes a harder concrete.

The dry mixture sets more slowly and hardens only after several hours.

2. Wet concrete should be left for at least an hour before the form is disturbed.

The dry mixture molds may be taken apart immediately.

3. The wet form is quite well cured within two or three days.

The dry product should be left for at least thirty days.

Some engineers insist that all cement structures should cure for at least thirty days before using in order to prevent cracking and possible accidents. While poles as well as building blocks have been molded one day and used the next the practice is unsafe. Cement concrete hardens continually for quite a long time and is much harder at the end of one year than it is even after thirty days' curing.

Whether wet or dry mixtures are used, however, they should not be exposed to the sun while curing, and should be kept damp while curing by wetting with a hose occasionally, for, if cement dries too quickly it will not attain its full strength. Keep it under a shed, tarpaulin or even tarred paper, but don't let the sun at it under three days and do not forget that cement sets best under water and a dry mixture must be wet pretty thoroughly before it will harden at all.

Reinforcement.

Concrete columns will stand an immense downward pressure, but under the stresses of expansion and contraction there is a tendency to crack. In order to overcome this tendency and permit of greater elasticity iron rods should be placed through them at regular intervals. Concrete will cling to plain, clean iron as firmly as to the sand and chat composing the mixture; should the rods be rusty you have, of course, only the holding strength of the rust coating. It will also cling to wood in the same manner, provided the wood has been well dampened, but wood shrinks in drying and its holding power cannot be relied unpon. With iron, however, the case is different and as iron and cement have the same coefficient of expansion, there is never any deterioration of its holding power. The best size of rod to use in pole construction is about one-fourth inch chamfered plain steel without any galvanizing or paint upon it —as the concrete will not adhere so well to zinc which forms the coating of galvanized wire. These rods should be drawn tightly from end to end and tied together with wire at intervals of four to five feet in order to strengthen their holding power as well as prevent spreading while the concrete is being poured. Four of these rods are enough for any pole up to twenty-five feet in length and their number increased in the larger sizes up to say ten in a forty-five foot pole, but the extra rods need not be extended all the way to the top, but spliced onto the others at from one-half to two-thirds of the way up from the bottom. The rods at the bottom end may be bent around the bottom of the pole—thus grounding them—while those at the top may be cut off and the top of the pole afterwards rounded off with a trowelful of cement mortar. As each quarter inch rod has a breaking strain of approximately 4,000 pounds, it will be seen that when buried in concrete that adhers firmly, four rods will constitute a pretty strong column, especially when they are all bound together by wire. Iron buried in closely tamped concrete does not rust very much as the concrete keeps the air from circulating around it, so that for these rods it is safe to estimate at least fifty years of life and perhaps more by which time we may have some system entirely different. It should not be forgotten that cement adhers to iron only when the iron has been wetted, which is necessary in dry mixtures.

Forms.

In making forms for pole construction rather heavy planking is required if wood is used. This plank should be planed smooth with no rough spots or splintered projections. It should be filled with oil and when set up should be well greased on the inside to prevent the cement from adhering to the sides.

When desired holes for the arm bolts as well as the through bolts for braces can be formed by placing a straight five-eighth inch rod where required. Should it be necessary to insert steps, holes can be bored in the side of the form and round bolts inserted the desired distance. When the form is taken down these bolts must be withdrawn, but steps can be put in when the concrete has set, with a little thin cement mortar which will harden and hold them in place.

When steps are not used poles must be climbed with a ladder or a sling.

Transportation and Setting.

Concrete poles cannot be treated in all respects like wooden poles. They do not have to be gained nor need they be roofed except for appearance's sake. Being heavier than wood, weighing about 100 pounds to the cubic foot they can not be piled on an ordinary wagon nor set up with pikes. The poles must, therefore, be set by means of a swinging gin pole preferably one that can be attached to a wagon that will both load the poles and swing them into the hole, guide ropes being largely relied upon to straighten the pole up when it is once in the hole. In this connection I should also like to suggest another idea. We have too long relied upon the old fashioned bar, shovel and spoon in digging holes when machine augurs will do it much better and more rapidly. This is possible with concrete poles, because the butts will be of uniform size, so that it will not be necessary as in the case of wooden poles to make allowance for crooked and unwieldly butts and make holes large enough for cyclone cellars in order to have room for the line up. With concrete poles the stakes can be set exactly in line by means of a surveyor's transit and there will be no excuse for not placing the augur in exactly the right place and running it down in from five to ten minutes in ordinary soil. Let us get out of some ruts that have only antiquity to recommend them. Intelligently applied, half a dozen men can set more poles by this system than three times their number by the old methods.

On account of their weight five 20-foot concrete poles will make a load over ordinary dirt roads, a feature that will have to be reckoned with in estimating their final cost.

Pole Fittings.

Arms may be put on by two methods: Either by a through bolt from the front of the arm to the back of the pole backed by two-inch washers, or by two bolts through the front of the arm to an iron strap back of the pole, the bolts passing outside the pole altogether. When properly tightened these bolts will hold the arm in position and make, in many cases, braces unnecessary. Guy wires must not be wrapped round the pole as has been common practice as they will crush the corners and tend to break the concrete unless a shield of one-eighth sheet iron is placed underneath. In one form of guying that to the writer's knowledge has stood strains equal to two or three cables an eyebolt of three-fourth inch iron passes through the pole and clamps two plates 4x8x½ inches in size on each side of the pole, the broad surface of the plates prevents any crushing action that may arise from the strain in a cable span and the two eyebolts pass through both plates. Where steel arms are used an eyebolt is used which holds both arm and guy. Personally, however, I think that a clamp outside of the pole would be better than the eyebolt.

Costs.

"What is all this going to cost us" is about the first question we will have to answer and it is the important one to the manager who has to hustle to keep up with his growing business.

A table of comparative costs between concrete and cedar poles given out by Mr. Bailey of Richmond, Ind., covers all labor on poles to setting them in the ground. (Table 1.)

An analysis of the above table shows some costs disproportionate as, for example, in the matter of bailing wire and steel rods which are not consistent with the size of the poles. It is absurd that the concrete costs in a sixty foot pole should show a cost of $8.54, while the reinforcement of rods and bailing wire should cost $16.36 a proportion of two to one. For each cubic foot of cement in the poles his items are divided as follows:

Cement	$ .14
Steel	$ .16 2-3 to .29
Labor	.25

It will thus be seen that Mr. Bailey is yet uncertain regarding the amount of steel necessary. As a matter of fact quarter-inch rods would have answered every purpose and the inch rods he uses are heavy enough for a 200-foot chimney. It seems to me also that the dimensions given by Mr. Bailey are very large for they are of the same size as first-class cedar poles, which is unnecessary in ordinary work, for as a concrete pole with a four-inch top is much stronger than cedar and no allowance whatever need be made for sap wood so that there is no use in following cedar sizes unless a very much larger safety factor is desired.

Let us now take up the question of poles that are not required to give service for more than thirty or forty years that can be manufactured at reasonable cost using Mr. Bailey's figures, fifty-six cents a cubic foot, as a basis to estimate upon square poles.

Dimensions				Costs Itemized			Total	
Length, ft.	Top, in.	Butt, in.	Steel rod, in. diam.	Cu. ft. concrete.	Steel rod. Bail wire.	Concrete. Labor.	Total cost concrete.	Total cost cedar.
25′	6″	10″	⅜″	16	$ 1.57	$1.20	$2.24	$ 4.70	$ 9.71	$ 4.10
30′	6″	11″	½″	21	2,29	1.20	2.94	5.20	11.63	8.25
35′	6″	12″	⅝″	26	3.91	1.20	3.64	5.70	14.45	11.15
40′	7″	15″	¾″	36	6.31	1.50	5.04	7.20	20.05	15.00
45′	7″	16″	⅞″	43	8.56	1.80	6.02	8.70	24.78	22.20
50′	7″	17″	⅞″	50	9.50	1.80	7.00	10.20	29.50	26.70
55′	7″	18″	1″	56	13.34	1.80	7.84	11.95	34.95	33.30
60′	7″	19″	1″	61	14.56	1.80	8.54	14.70	40.60	39.75

Dimensions.

Length.	Top Inches.	Butt Inches.	No. of ¼″ Rods.	Cu. Ft.	Wt., lbs.	Cost Set up.
18	4	7	4	3.2	320	$ 1.79
20	4	7	4	4.2	420	2.35
22	4	7	4	4.7	470	2.63
24	4	7	4	5.0	500	2.80
30	4	8	6	6.3	630	3.53
36	4	9	6	10.56	1056	5.91
40	5	10	7	15.62	1562	8.75
50	6	12	8	28.1	2810	15.73

The estimate in table 2 does not include hauling which must be taken into account. Another item that must not be overlooked is that of distance from sand and gravel pits, which will cause a wide variation of costs of concrete Where there are a large number of poles, say, a couple of thousand, the cost of a cement mixing machine—about $250—and the cost of forms should also be added. Handling wooden poles has been reduced to a system while concrete pole work has not as yet been systematically arranged, but can easily be made so.

Study the best means of perfecting your service to the public. Many times it will not be appreciated, but eventually it comes to be valued by many.

Is Physical Connection Desirable?

By D. A. Reynolds

President Woods has rendered a great service to the industry he represents. Not as the president of the National Independent Telephone Association or as president of the Lincoln Telephone & Telegraph Co., but as Frank H. Woods. He has squarely raised the question of Physical Connection, stepping resolutely into the arena to defend his views, voluntarily divested of the shield of his position.

Unfortunately, his interview is so meager as to present few points for attack, but this again evinces the wisdom of the gladiator, who has every reason to expect criticism from every quarter, from both friends and foes. He has said sufficient to invite comment, however, and to clearly define his opinion as Frank H. Woods, and we may justly expect a fund of valuable information ready to fortify the position taken, as soon as some one is found with sufficient courage to assail it.

I am one of those who see many difficulties to be overcome before Physical Connection can be made to contribute to the permanent advancement of the industry, and the many dangers threatening the bark of Independent telephony. As a national question, and I presume Mr. Woods invites criticism on the broadest possible ground, we see an unorganized industry matched against one of the strongest organizations known to business life, with one policy for the East, another for the West, another for the South and a general policy of annihilation wherever competition presumes to enter the field. It has no settled policy for dealing fairly with its neighbors, and invariably imposes such conditions as it is able to enforce in each instance without regard to equity and justice, but with a studied purpose of ultimate subjugation.

Were it possible to disfranchise the Bell system and eliminate it from politics; were it possible to create a Commission or other governing board without the appointment of its subalterns from the Bell ranks; were it possible to destroy the dominant forces of organization and supplant them with a mob of contention, it might then be possible for the lamb and the lion to lie down together, with the lamb outside the lion.

We are proposing to take a great industry now quite evenly divided between a well organized, centralized and systematized corporation of practically a billion dollars, fortified by a generation of experience and unlimited resources; and an unorganized, disassociated element of diverging interests composed of 23,000 units, inexperienced and with limited capital, the management of which, in a large majority of cases, is secondary to other business interests, and expect to harmonize those interests in a manner that will benefit the 300,000 stockholders who have invested their savings and contributed their influence to their "home industry."

To my mind, Physical Connection demands more than a mechanical, electrical and commercial construction. There is an element of ethics that enters strangely into this question that cannot be disregarded. The groups of influential business men in the thousands of small cities and villages who have suffered the humiliation of arrogance for years, until exasperated beyond endurance, who have contributed from their business the funds necessary to provide themselves with telephone service will not readily surrender their independence or consort with the defamer of their patriotic efforts. They have witnessed the disgrace of abortive flirtations in the past, and realize that illicit connection under the promise of marriage, such as proposed by Mr. Woods, must sooner or later result in betrayal. Nor can we, as Independents, afford to encourage such relations if we hope to go forward with the development of the industry along Independent lines, free from the dominating and devastating influences of the Bell, for—

"Seen too oft, familiar with its face,
We first endure, then pity, then embrace."

In the Public Service Commission Law of the state of New York, probably the best law so far enacted in the several states, fully four-fifths in number of the telephone companies are exempted from its operation. The law very justly recognized the impracticability of enforced connection without standardization, and avoids confiscation by allowing each local company to meet conditions within the territory covered. It is conceded that the service is not first-class, but it serves the purposes of its creation and need not be disturbed. Not all men can wear broadcloth, and if a community is content with "home-spun," the law says it may be left to work out its own salvation.

If, then, in the consideration of this question, we include only the plants that have been standardized or which are sufficiently in accordance with the specifications imposed by the Bell organization to permit of Physical Connection, what is to become of the thousands of local plants which have been built up under a promise of connection with the Independents in the larger centers? Do we not raise a question of "good faith" which we are in duty bound to recognize, the abrogation of which is not only dishonorable but absolutely harmful? It may be said of these inferior plants that standardization would be to their benefit, but everybody knows that standardization is impractical in the rural districts where cheap telephone service is imperative, and that when we make cheap telephony difficult or impossible, we have destroyed the incentive under the influence of which this vast system of Independent telephony has been built.

But what great benefits does Mr. Woods expect Independent Telephony to derive from Physical Connection? Certainly more than the demonstration of the fallacy of the old Bell axiom of "universal service." He very aptly expresses his doubt of their sincerity, and intimates that they may be forced to their ideal by legislation. Very likely, but on whose terms and under whose specifications? But he says that Physical Connection in Lincoln at 5 or 10 cents a connection, would yield about $25,000 additional revenue per annum for each system. Would it, and upon what basis?

When New York City investigated telephone duplication in 64 cities where competition existed, they found an average of 15 per cent duplication, fully 40 per cent of which was in establishments where one telephone would have been inadequate had there been but one system. Admitting that Lincoln is more favorably situated to avail itself of Physical Connection than the average, would present conditions continue under Mr. Woods' plan? $50,000 for an interchange of business means between 600,000 and 700,000 messages, or say 2,500 messages a day. It means full rental on over 1,000 telephones at $48 a year. Will the people of Lincoln willingly add this amount to their telephone bill and continue to use both systems? Is it not more likely that Mr. Woods' plan will eliminate duplication entirely and thus cause a loss instead of a gain in service? Would a subscriber be likely to continue the services of both companies when for a small toll charge of 5 or 10 cents he could command the lists of both companies? Mr. Woods contemplates giving the telephone users of Lincoln the benefit of 20,000 telephones instead of 10,000 at an additional cost of $50,000 a year; but will his theory hold in actual practice? If Lincoln has 15 per cent of duplication will not these 3,000 duplicate telephones be abandoned? Why continue duplication with Physical Connection? If duplication be abandoned, which will suffer the greater loss, the Bell or Independent plant? Is it not likely that the Bell, with its superior long-distance lines, will see its advantage? If so, it

has lost nothing by Physical Connection, while it has been able to fortify its long-distance business by adding 7,000 Independent telephones or whatever there may be left of the Independent plant after the elimination of duplication.

If it be true that economy governs in the telephone as well as in other lines of business, then Mr. Woods' "dream of avarice" must be supplanted by the sordid reality of the "survival of the fittest." His theory will have destroyed the spirit of Independence and local pride, though his effort at consanguinity may have proved abortive, and he must henceforth meet the situation in the cold gray dawn with weapons of his own choosing but with which his adversary is an adept. Once tied hand and foot to accord connection to a rival, and Lincoln will be over-run with solicitors promising everything and appropriating the labor of years to their own benefit. He has pitted his strength against the giant which will wield his own sword against him with all the power of unlimited capital and unscrupulous methods.

But admitting the adaptation of Physical Connection to Lincoln, how will it conduce to the advancement of the industry elsewhere? Again, admitting its adaptation to conditions in the West, how will it work in the East? What inducement can be offered to a municipality to grant a franchise in the face of Physical Connection? Why have two sets of poles and wires if one will suffice? What can new development offer against entrenched service? What is there to appeal to the average business man with which to overcome his inculcated prejudice against "two telephones," when you take away the correcting influence of competition? Is it possible that half a billion dollars have been thrown away developing franchises under the stimulant of competition, only to find that the old, thread-bare song of the Octopus was, after all, the gospel of truth?

For fifteen years Independent telephony has struggled under a handicap that would have spelled ruination in any other line of business. First, through the use of inferior apparatus built to avoid Bell patents; second, through a lack of experience; and third, from an exclusion from the great trade centers of the country. The first two handicaps have been practically overcome, while New York, Chicago, and other large citadels of the erstwhile monopoly have been invaded and will soon be able to contend for their just proportion of the business. With the larger cities contributing to the convenience and advancement of the smaller centers, and with the revenue of the monopoly circumscribed by competition in the larger cities, a new life will be given to the Independent industry coupled with a stability that must command recognition from that element in the commercial life of our country that commands large investment; but let us make one mistake—let us once place our hand in the lion's mouth—and our vantage ground is lost.

If Physical Connection is what the Independents desire, they do not need Chicago, they do not need New York, they do not need any of the great commercial centers, because 5 or 10 cents extra will give them the use of the Bell system. Do not let us delude ourselves in thinking that such an arrangement could be made permanent, for a discrimination of 5 or 10 cents a message against the Independents is enough to drive every subscriber to the Bell system. This will not immediately follow, but starting with the users of long-distance lines, the exodus will gradually extend to other subscribers until the few remaining patrons of the Independent system, confronted with a toll charge for both local and long-distance service with the larger system, will bury their repugnance and join the majority. Where is there a more ideal method for undoing the work of years and making the Bell company the legatee of the millions spent in opposing its extortion?

What, then, prompts the advocacy of this ruinous policy? Is it possible that our friend and co-worker is becoming weary of the conflict? Does he begin to feel that the game is not worth the candle and that anything is preferable to this ceaseless fight against such awful odds? Then certainly it is our duty to come to his aid and point out the dangers that beset the "path of least resistance."

It is easy to go with the tide, but if an enemy direct our bark the vortex is inevitable. The tranquility of harmony with our opponents is beautiful in theory but dangerous as we approach the maelstrom that is sure to engulf us. Eternal vigilance eats into both brain and brawn, but the arm of the smithy was never made strong by inaction. The ship of Progress never enters the harbor of Prosperity without an effort, and Independent Telephony will never achieve its highest development through abject surrender or an alliance that will sap its life-blood and leave it a dependent upon the tender mercies of its adversary.

A Texan Speaks Out in Favor of Physical Connection.

In response to your editorial asking for suggestions, the writer begs to suggest that one factor of the Independent growth has not been given proper consideration when the arguments for competition were being dwelt upon, and that is, *the public*. It would seem that any debt that the public owe the telephone companies for better telephone facilities and lower rates has been discharged by the loyalty shown to these Independent companies, where they were deserving of such appreciation. There is no reason that will offset the argument advanced by the public that the nuisance of having two non-connecting telephone systems to a large measure offsets the benefits of competition.

To a certain extent the situation of the transportation companies is anomalous, and to a large extent competing lines in the same cities are obliged to arrange to transfer passengers. There is this difference between transportation companies and telephone companies, however; that the transportation companies do not stipulate nor advertise to deliver the customer to his exact destination. The telephone system, however, depends for its value on the number of its subscribers and the quickness of its service. Inasmuch as a passenger on a car must travel more or less after leaving that car to reach his destination, to a certain extent the matter of transferring for three or four blocks would not be of any particular value, and the clamor for a transfer system would only be where he would be under the necessity of paying another fare to reach his destination, or some point near it. The telephone, however, is designed to place the user in personal communication with the party desired, and he will not generally consider the leaving of his premises to use a telephone to call a party on a system rival to that with which he is connected himself.

It is extremely likely that the public will finally make such demands for inter-connection as will compel companies to comply with them, and it is more likely that after the interconnection is forced by the people it will be done in a manner more beneficial to the public than to the telephone companies.

It would be far better for the telephone companies to admit that there is such a thing as competition, and that it will continue to exist, an to adjust themselves to these conditions without permitting the public to feel that they are being over taxed to the end that two telephone companies in the same community may carry on a fight for business, the ultimate end being the entire duplication of every telephone in use.

I endorse the attitude of President Woods and admire his fearlessness in meeting the situation, and not permitting it to finally overtake and possibly engulf the companies through a wave of popular clamor.

Beaumont, Texas. C. W. Emmer.

Chicago Franchise Good for Whole City

Alderman Long, of Chicago, has been the unintentional cause of an inquiry which firmly established a point of interest to the Independent field of the entire north central portion of the country. The franchise of the Illinois Tunnel Co., under which a big Independent system is being constructed in Chicago, gives ample rights not only for the so-called "Tunnel District," covering the central business section, but the entire city. Further, the city could not, even if the administration were hostile, prevent the Tunnel company from making legitimate use of the streets for laying conduit.

This is broadly and clearly set forth in an opinion of Corporation Counsel Edward J. Brundage presented to Commissioner of Public Works B. J. Mullaney, last week, and briefly mentioned in TELEPHONY of Oct. 29. The opinion, written by Assistant Corporation Counsel Howard W. Hayes, says:

"The Corporation Counsel has directed me to reply to your letter of October 20, in which you ask to be advised as to the legal course for your department to follow in respect to a resolution introduced by Alderman Long at the last meeting of the City Council, directing the Commissioner to withhold further permits from the Illinois Tunnel Co. Your letter also requests advice as to the power of the Commissioner of Public Works to refuse permits to this company for the opening of streets and alleys, for the installation of telephone wires, conduits, poles to carry wires, etc., through the city generally.

Thirty Year Franchise for Entire City.

"The ordinance granted to the company which you refer to as the Illinois Tunnel Co. was passed by the City Council February 20, 1899, the grantee being therein termed the Illinois Telephone & Telegraph Co. This ordinance authorizes the company to construct, maintain, repair and operate in the streets, avenues, alleys and tunnels, and other public places in the City of Chicago, and along the Chicago River and its several branches, for and during the term of thirty years from the passage of the ordinance, a line or lines of conduits and wires, or other electrical conductors, together with all necessary feeders and surface wires or other electrical conductors, for the transmission of sound, signals and intelligence by means of electricity or otherwise. Section 2 of the ordinance requires the lines of wires to be placed underground in certain portions of the city. Section 3 provides:

"(a) That before wires used for the purpose of reaching and connecting subscribers and branch offices shall be brought to the surface and across streets and alleys, the consent of and a permit from the Mayor shall be secured.

"(b) That in the territory bounded by Lake Michigan on the east, the Chicago River on the north, the South Branch of the Chicago River on the west and Twelfth street on the south, such wires shall not be strung overhead to exceed two blocks in length from their underground connection, and that the consent of and a permit from the Mayor shall first be secured for the purpose of stringing such wires.

"(c) That the Mayor may designate in what streets the conduits or wires or other electrical conductors may be laid within the territory last above described, but the streets so designated shall be near enough together so that every portion of every district can be reached.

"(d) That after the company shall have commenced laying its conduits it shall, in streets which it desires to use for that purpose and which are to be newly paved, lay such conduits prior to the laying of the new pavement, when so required by the city.

"(e) That the company shall at all times place and keep on file with the Commissioner of Public Works plans showing the location of each conduit laid and the number of ducts and wires in each conduit, and shall, before laying any new conduit, file with the Commissioner of Public Works a plan showing where such conduit is to be laid, and the location of manholes or other openings to gain access to said conduit, and that no conduit shall be laid without first obtaining a permit from the Commissioner of Public Works.

"Section 4 also provides for the obtaining of a permit from the Commissioner of Public Works, who shall 'grant to said company a permit in accordance with the conditions and requirements of this ordinance,' for the opening of any street for the purpose of laying, repairing or removing conduits, wires or other conductors.

* * * * * * * * * *

Company Entitled to Street Permits.

"The Illinois Telephone & Telegraph Co. is therefore entitled to have issued to it any permit for the doing of work authorized by its special ordinance and not prohibited by the terms of the general ordinances as they exist at the time the permit is applied for. If this company brings itself within the conditions of its special and the general ordinances of the city, the Commissioner of Public Works would have no grounds upon which to refuse the issuance of permits, for nowhere is he given discretionary power in this matter."

At a meeting of the Committee on Streets and Alleys on Wednesday of last week Mr. Hayes explained concisely that the ordinances above referred to leave the city no right whatever to prevent the company from opening streets paved prior to Feb. 28, 1910, while streets since then can be opened under permit from the Mayor, which must be granted if the company is willing to go between the curb and property line. The rights of the company to extend its system into the residence and business sections beyond the tunnel district are thus held to be **ample.**

Bell Telephones to Be Removed if Increased Rates Are Demanded.

Subsequent to the burning of a private switchboard in the Louisville Trust building at Louisville, Ky., the Cumberland Telephone & Telegraph company attempted to install direct line service for numerous attorneys who have offices in the building, but the lawyers opposed the accompanying increase in rates. Preliminary moves were made by a committee of the advocates toward a continuance of the trunk lines, but the Cumberland management refused to consider any advances in this direction, and say that the trunk line service will continue until Nov. 1, only. In that event the Cumberland service will be discontinued altogether in the building.

The Louisville Home Telephone company has installed about 45 direct service lines in the Trust building and no complaint has been registered by the patrons, or the Home rates give all-day and all-night service throughout the year for the same sum that is paid by the Cumberland patrons for trunk line service only during working hours of the day, exclusive of Sunday.

Letters from Observing Workers

A Voltage Reducer for Testing Instruments.

It is often desirable when measuring resistance with a voltmeter to have a source of current of just sufficient strength to cause the meter to read up to the maximum deflection of its scale. In order to accomplish this without bending the needle or burning out the movement with too strong a current, a special rheostat has been devised with a circular arrangement of contacts. By its use the current through the instrument may be easily and quickly adjusted to suit requirements. Many country exchanges and some of the larger exchanges are provided with only a low reading voltmeter, with sufficient scale length to be closely read to small fractions of a volt.

When one is working in some small exchange, with only a 15-scale voltmeter and no chance to get a different instrument, it is rather exasperating to find that there is no source of current which will give just 15 volts, no more and no less. If one inserts resistance in series with such a voltmeter, together with a group of half-worn-out dry cells, and attempts to take readings for resistance by fall of potential methods, a large source of error is caused immediately by the series resistance and variable internal resistance of the battery. Mathematical computation is also more complicated as a result of the series resistance. Hence, the final results are of little or no practical value, even within a commercial percentage of accuracy.

Anyone who has tried the series resistance stunt must have

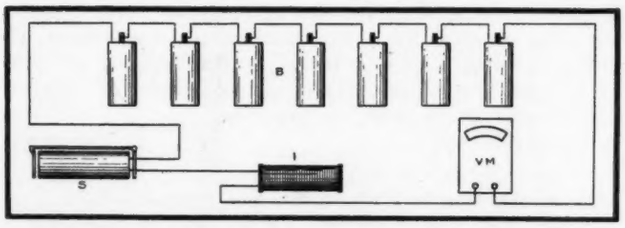


Fig. 1. Use of Old Dry Cells and an Impedance Coil for Regulating Testing Current is a Cause of Inaccurate Measurement.

observed a sluggish and undependable swing of the needle as a result. Therefore, a crisp comparison of either high or low resistances becomes practically impossible. Again, the series resistance must be of a known value. In some instances it consists of a 100-ohm impedance coil, or a spool of German silver wire, the resistance of which is guessed at from its weight and an antiquated wire table.

"A horrible example" of a country exchange testing outfit is given in Fig. 1, where *B* represents a set of partly "dead" dry cells of surprisingly variable internal resistance, *I* an impedance coil of perhaps 100 or 200 ohms, within 5 to 8 per cent, and *S* the unknown resistance, probably a switchboard drop coil or a relay whose insulation is leaky. It has been the experience of many not having access to a Wheatstone bridge to vainly endeavor to determine the resistance of a drop coil or relay insulation and find that no definite result could be reached. Only a rough and very imperfect calculation can be made at best when conditions obtain as in Fig. 1. Hence it is that there have to be devised other means which embody only the basic principles of the laws governing the flow of electricity and magnetism in circuits, and which allow far greater accuracy than the former scheme.

In Fig. 2 is shown a modification of the potentiometer principle. The theory of the circuit may be deduced from Fig. 2, in which *D* is a tapper movable over a resistance *R*, and the circuit from *A* to *B* carries continuously 110 volts or any other potential available for testing purposes. *O B* and *O H* have practically no resistance. By moving the pointer *B* over this resistance the potential between *E* and *H* may be varied from the full pressure of the 110-volt circuit down to zero at will. Because the fall of potential along the wire is uniform, a constantly diminishing pressure may be tapped off by moving the pointer *B* toward *H*. Thus the pressure between the terminals *E* and *H* may be varied at will.

The actual working characteristics of the apparatus may be

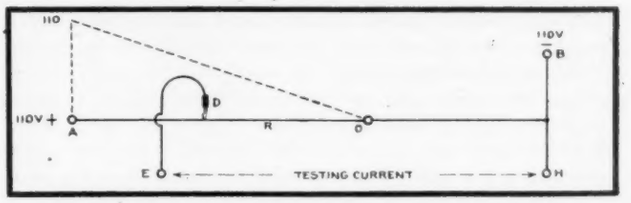


Fig. 2. Diagram Illustrating Theory of Voltage Reducing Resistance.

expressed as in Fig. 3, where the resistance *R* takes the form of a dial of about 100 points, the resistance between each two points being about 5 ohms, making a total resistance of about 500 ohms in the entire dial. The whole current at 110 volts pressure circulates in this circuit continuously, while the testing voltmeter current is variable and can be taken off the lower binding posts. This fall of potential rheostat can be used for supplying current for Wheatstone bridges, first low, then high, for final balancing; or for supplying current to a milliammeter when used in testing multiple troubles. Since the rheostat can be adjusted to furnish just the right potential to swing the voltmeter needle up to a maximum deflection, no series resistance will be needed and hence crisp, accurate testing can be easily accomplished by its aid.

Construction of the Potential Rheostat.

The base consists of a sheet of hard rubber ⅜ in. thick and 7x9 in. square. In this is drilled a circle of 104 holes of such a diameter that 1¼ in. No. 16 brass escutcheon pins can be driven in with a tight fit. Care must be exercised in driving the pins, as some are thicker than others, and if too many large ones are driven in the hard rubber base is apt to split. The heads of the pins form the contacts over which runs a wiper lever.

The resistance of the potential regulator is composed of No. 28 B & S gauge German silver wire of 18 per cent quality. Universal experience has proven that graphite or water

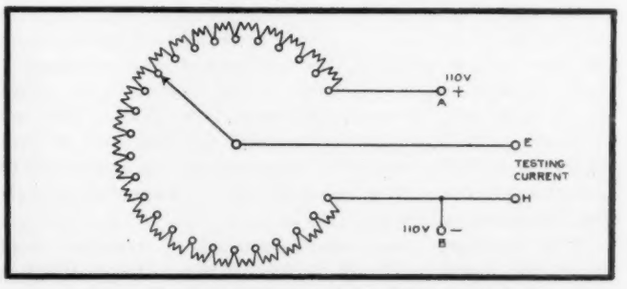


Fig. 3. Theory Diagram Voltage Reducing Rheostat.

resistances are unreliable, erratic and unsuitable for use in connection with measuring apparatus. Such material is suitable only for very rough or coarse work, and even then only for periods of comparatively short duration.

A form of coil was developed which was compact, noninductive, and contained the most wire for the least amount of space. After measuring off the proper length of wire, such

as to measure about 5.75 ohms, the two ends are brought together, the loop hooked over a nail driven in a forming board, and the two strands led around another nail a suitable distance from the first nail; then back again to the first nail until the wire is wound in a long coil, the ends of which are tied with waxed thread. The coil can then be removed from the nails without losing its form. It is essential to so space the distance between the two nails that the ends of the wires extend about ¼ in. from one end of the coil. The cotton insulation on the wires can be pushed back slightly with the fingers, and the wire then grasped with pliers. Then by forcing back the insulation with the fingers, performing the operation with a quick jerk, it will be found that the wires will be bared an even distance, and can then be soldered on the ends of the escutcheon pins easily.

The adjustable slide resistance is formed of the same size resistance wire, wound closely on a copper rod about No. 14 B & S gauge. Two coats of colorless lacquer are then applied and baked on, after which it will be found that the cotton covering can be filed off, exposing the bare wire beneath. Connection is made by means of a sliding wiper. Four binding posts are mounted on the base and connections are made as shown in Fig. 4.

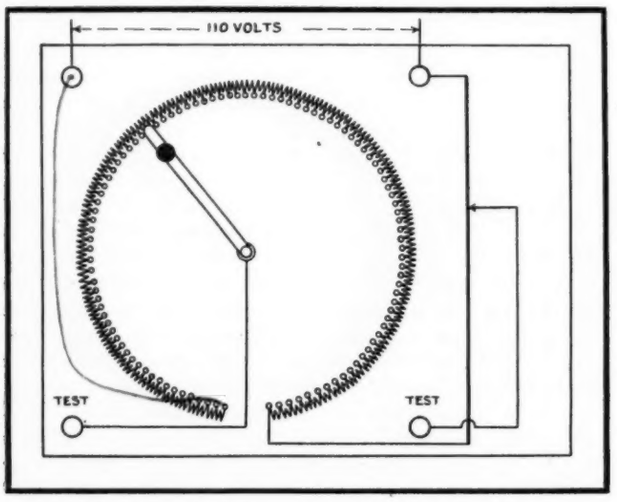


Fig. 4. Actual Layout of Potential Rheostat.

Minneapolis, Minn. A. M. Severson.

Repaired Intercommunicating System Worked Two Years Without Serious Trouble.

We have in one of our school buildings an intercommunicating telephone system which gave lots of trouble when it was first installed. The transmitter and receivers of two telephones were in series, when talking, with a combined resistance of something over 2,000 ohms. The bells were rung two in series, with a combined resistance of about three ohms and a shunt to short circuit the coil when the armature was drawn up near the cores. There were twelve wet batteries in series.

The complaint was that a new set of batteries would be all run down in a week or two of use. After straightening out the connections, which were somewhat mixed, we rewound the bell ringers to 10 ohms each, although I think that 20 ohms would have been better if the bell spools had not been so small. Then we cut out the shunts and left each bell to work the same as an ordinary door bell. Next we recharged sixteen old wet batteries and connected them, eight in series and two in multiple, connecting the zincs together and the carbons together on each pair. This brought the voltage down so that the transmitters didn't "fry," and the bells worked very well even without adjusting to the same rate of vibration. No more attention had to be given to the system for two years.

Fuse No Protection Against Lightning.

The result of the alternating current produced by the surging of lightning was nicely illustrated by a fuse exhibited at the telephone office of the New England Telephone Company in Manchester, N. H. This fuse was in use between the battery and switchboard when the lightning came in and stripped the asbestos braid covering the fuse wire into shreds, which were clinging to the unblown fuse. The fuse only showed very fine globules on the surface to indicate what it had been through. If the same quantity of direct current had passed through the fuse there would have been no damage done.

I think the carbon protector connected in the straightest and shortest way possible to a near and good ground is the best thing known. A few turns of wire between the protector and the telephone, with a nail inserted, will keep out more lightning than a line of fuses fifty feet long.

Manchester, N. H. A. A. Jenkins.

Measuring Instruments a Good Thing for Small Companies.

I was much interested in the article, "Chasing Trouble," by J. C. Fuller in the October 15 issue of TELEPHONY.

Few of the small companies, having up to 600 or 800 subscribers, use any resistance measuring instruments at all, so that much of the poor service in the rural districts is caused by a lack of understanding of methods of testing.

One of the greatest troubles of the small rural companies is in keeping the lines and apparatus in a condition to give even a passable quality of service, so that anything which will help along in this line of work, as an ohmmeter or some such instrument will, is to be recommended.

Chesterhill, Ohio. F. Hammond.

Handing It Back to Mr. S—. from Missouri.

That little "curtain incident" seems hard to down—for instance, suppose I should follow the advice given by Mr. S. and remove the insulation between the two outer springs. Would it not result in a short circuited generator for a fraction of time every time the springs were operated? In other words, if one takes hold of the crank and develops any degree of speed, the moment he ceases to press on the crank the shunt springs operate instantly, and so throw the generator on short circuit *while at high speed* and I presume Mr. S. knows or can imagine what a few of these would do for a generator. Now, on the other hand, why are these thusly?

First, you have a generator that can be used either series or bridging and in this day of installing selective ringing telephones, which for practical results should be bridging, you are away ahead of the fellow who can only use his generator as series.

Then they are not *all* installed where a curtain is hooked on the crank. I would much rather take my chances with a few curtains and know that I had up-to-date instruments that did not need doctoring to make them work.

Mena, Ark. I. M. Davis.

Thought "Universal Service" Was a Reality!

A North Side subscriber called in and said: "An will you plaze give me connections with the Auld Counthry?" She was told that we did not connect there and was advised to send a cablegram. "No. I don't want to sind onything of the kind. I want to talk; git 'em for me." When asked where her party was to be found she said, "No mather about that. I'll find 'em meself when you git the Auld Counthry for me."—*Operating Bulletin of the Chicago Telephone Co.*

Telephone Law

Conducted by A. H. McMillan

Protection in Reasonable Tree Trimming.

Please advise through TELEPHONY if we have the right to trim these trees.

About ten years ago we built a 40-ft. pole lead which carried two 10-pin arms, along the curb line. We cleared these trees several feet. The trees are on the curb line, and now have grown into our wires. The property owner has served notice upon us that we could not trim the trees in front of his residence. These trees are on the south side of the street. We are operating under a franchise and there is no town ordinance about trimming trees as far as we know.

If we should trim these trees so as to clear our wires would we be liable to him for damages?

Is there a law that will protect us?

In Indiana, a telephone line is not an additional burden upon the highway. Coburn vs. New Tel. Co., 156 Ind., 90; 59 N. E., 324, 671. Hence, a telephone company may trim trees to a reasonable extent to protect its wires, especially where it is acting under a franchise. Atlanta vs. Holiday, 96 Ga., 546.

Hiring Lineman By the Year.

We are having trouble with one of our linemen. He is talking about suing the company for the balance of his time; also damages. We haven't any written contract between the lineman and company, but on February 8, 1910, when the board of directors were in session, they passed this resolution: "Moved and seconded that we re-employ Mr. ——— as lineman for the year 1910." Mr. ——— would not accept unless he got more money than he had been getting, so the matter was continued until the next meeting, which was on March 5. Then the directors voted on him again and he was declared elected, so he went to work. On August 20 the board sent a committee to ask this lineman to resign. He said that he would, but on the next day he called up the president and told him he had reconsidered and would not resign, so the board on their next meeting day accepted his resignation anyhow, and employed another lineman in his place. What can he do to us?

The lineman in the case above stated was hired for the year. He was under no obligation to give his resignation and his statement to the committee that he would do so was subject to his withdrawal at any time before the resignation was accepted. It is the legal editor's opinion that the lineman may hold the company liable for damages, such damages being the amount of his salary for the unexpired portion of his time, less whatever he earns in the meantime. It is his duty to obtain other employment and give the telephone company credit for all of his earnings during the year.

Telephone Construction Work Not Attractive to Children.

The Missouri and Kansas Telephone Company was stretching a cable in Kansas City. It was at work in a vacant lot, with the owner's permission, using an appliance consisting of pulleys and a rope strung along the line of poles and down alongside of the poles to the ground. Some children of the neighborhood were playing there, as they were accustomed to do, and one of them, a boy of five years, took hold of the moving rope, first permitting it to pass through his hand, and then suddenly taking tight hold of it so that his hand was drawn into the pulley and permanently injured. The work was not dangerous to bystanders and the company had not warned the child. In a suit brought to recover damages, the court gave judgment for the telephone company, and this decision was affirmed by the Kansas City court of appeals. Hall vs. Mo. & Kan. Tel. Co., 124 S. W., 557.

Limit to Power of City to Reduce Rates.

Under the Federal Constitution, a municipal corporation, although having power to regulate the rates to be charged by a telephone company, may not reduce such rates below what will pay operating expenses, maintain the plant and give a fair return on the capital actually invested. This is the holding of the United States circuit court of appeals in a suit brought against the city of Owensboro, Ky., by the Cumberland Tel. & Telg. Co. to restrain the city from putting in force an ordinance of the common council passed in August, 1908, and regulating rates for service. The rates fixed by the ordinance were $30 per year for business houses, $10 per year for residences, and $12 per year for extension desk telephones. The company's right to do business in the city was sustained under an ordinance passed in 1889 and based upon the law of Kentucky (Acts 1881-82, p. 817, c. 461), which holds that the use of a street is for a public and not a private purpose. Under this law a general power was expressly given to the city by special charter to "regulate" the streets, alleys, etc. This provision was held to import power to control their use, the word "regulate" being a word of wider import than "control," and to authorize the city to grant a telephone company the right to erect and maintain its poles in the streets. This earlier franchise was held to be in the nature of a contract and not affected by the constitution adopted by the state subsequently. City of Owensboro vs. Cumberland Telephone & Telegraph Company, 174 Fed., 739.

A Void Minnesota Franchise.

At East Grand Forks, Minn., the Polk county district court has declared the franchise granted by the city council to the Tri-State Telephone Company to be void. The company will immediately ask for a new franchise. Acting under the franchise that has just been declared void, the company has spent a great deal of money in the city.

Liability Where Operator Represents Doctor.

A Texas man named Owens told a telephone operator to call up for him a doctor at a neighboring place. The operator, after ringing, told him the doctor was at the telephone, ready to talk with him. Owens then talked over the telephone with a person whom he believed to be the doctor but who in reality was the company's operator at the neighboring place. Owens told this person the condition of his wife, who was sick, and the person promised to call as soon as he could get his horse. The operator made no other effort to reach the doctor. It was held, on suit, that the company had notice of the wife's condition and was liable for damages resulting from the non-arrival of the doctor.

Texas Central Telephone Company vs. Owens, 128 S. W. 926.

Dallas Telephone Ordinance.

The telephone ordinance of the city of Dallas, Texas, has been the subject of litigation for some time. It was held valid by the decision of the 14th district court of the state. Then in July the special court, appointed by the court of civil appeals, upheld this decision. The telephone company moved for a rehearing and this motion has just recently been denied. The telephone company has now given notice of appeal to the supreme court on the ground that the ordinance is unconstitutional and that the citizens of Dallas, under the charter, have no right or power to vote such an ordinance. The company also asks that the court decide whether the ordinance applies to service furnished to patrons within and without the city limits.

Telephone Finances

New Hampshire Company Has Paid Six Per Cent for Twelve Years.

The Citizens' Telephone Company, of Laconia, N. H., reports that it is prospering and growing steadily. Within the past eight months 200 new subscribers were added to its list. Dividends at the rate of 6 per cent per annum have been paid regularly for the past twelve years on a paid up capital of $100,000. Likewise this company is clear of all indebtedness.

Officers of the Citizens' company are: A. W. Abbott, Laconia, president; L. B. Cole, lakeport, treasurer; and W. B. Johnson, Laconia, manager.

Norwegian Telephone Statistics.

In Norway, according to Government statistics, there were in the administration year 1906-1907, 17,453 telephone subscribers in the thirty-four government exchanges. Of these Christiana had 13,485 and Trodhjelem 2,233. In the administration year 1907-1908 the total number had increased to 18,602, of which there were 14,398 at Christiana and 2,334 at Trodhjelm.

The number of messages was reported as follows:

	1906-1907.	1907-1908.	Percentage of Increase.
Toll	46,541,705*	49,595,962†	
Toll, within country	2,477,631	2,802,107	13.1
International toll	67,324	78,458	16.5

*38,844,072 in the Christiana exchange.

†41,423,793 in the Christiana exchange.

The international messages were divided as follows:

	1906-1907.	1907-1908.
Conversations exchanged with Sweden	58,839	64,738
Conversations exchanged with Denmark	8,473	10,625
Conversations exchanged with Germany	12	8

The revenues derived from telephone service were approximately as follows:

	1906-1907.	1907-1908.
Tolls within the country	$257,090	$291,760
Tolls, international	11,507	13,537
From local traffic	293,209	310,165

The expenses for telephone administration do not seem to have been adequately separated from those pertaining to the telegraph service.

In addition to the government systems there were at the end of the year 1906, in Norway, 200 private telephone companies, operating 44,650 kilometers of wire on subscribers lines and 25,035 kilometers of toll line. These companies served 25,120 subscribers from 622 switchboards. In their services there were employed 1,397 persons, and the total number of conversations carried on over the lines of all these companies is reported at 1,460,632. Financial returns indicate that there was invested in these companies, in 1906, $1,215,850. The expense for operation in 1906 was about $211,000.

Inventory of Bell Property at St. Joseph.

The Missouri & Kansas Telephone Company, on October 5, filed with the secretary of the local Public Utilities Commission an inventory of its property in St. Joseph, Mo., together with a report of earnings and expenses.

The capital account for this property totals $1,135,375.15, embraces the inventory valuation, $1,076,375.05; the working capital, $15,000; and the going value, $44,000. Using the cost of procuring subscribers during the past few years at $11 per subscriber, the cost of development, or going value of plant, on a basis of 8,000 subscribers would be $88,000, but in its statement the company has taken only half of this amount.

Allowing the local exchange 15 percent of the total receiptos for outgoing toll business, averaging a trifle over five cents a message, the toll receipts creditable to the plant for the last six months of 1909 were $3,226.03 and for the first six months in 1910 amounted to $4,119.13.

The total receipts for exchange and toll service for the period from July 1, 1909 to July 1, 1910 amounted to $246,-989.68, of which $124,741.18 were for the last six months of the period. Expenses for the six months ending June 30, 1910, were as follows: Salaries and wages, $25,776.88; advertising and commissions, $8,752.69; directory, $1,246.82; total, $37,361.74. In the maintenance department the salaries and wages aggregated for the same period, $11,-220.78; material, $3,157.78; supervision, $806.94; other expenses, $658.94; total, $15,844.44. Insurance, rentals, taxes and depreciation are fixed at $53,818.75, making the grand total of expense for operating the local plant for the six months ended June 30, 1910, $120,803.88, $3,937.30 less than the receipts.

Depreciation was estimated at ten percent, to show low net earnings, which are estimated to be between ½ and 1 percent of the property valuation.

This report was called for by the Public Utilities Commission which is considering the matter of regulating the rates and charges made for service.

Telephones in Italy.

Following are statistics reproduced from the *Journal Telegraphique* on the telephone growth of Italy in the fiscal year 1907-08, as set forth in the reports of the Minister of Posts, Telegraphs and Telephones. The statistics are divided into two classes, pertaining respectively to systems operated by the government and by private parties. For the government system the following data are presented:

	Jun 30, 1907.	June 30, 1908.	Difference.
City exchanges	38	49	11
Public telephone stations	215	256	41
Number of subscribers in city exchanges	31,244	36,243	4,999
International Lines.			
Number of lines	9	10	1
Length of pole lines		711,052	
Length of wires		1,422,104	
Interurban trunks.			
Number of lines	164	216	52
Length of lines		17,120,071	
Length of wires		34,240,142	

In the systems not owned by the government about one-third as many subscribers are served. The total figures are as follows:

City exchanges	103	118	15
Country exchanges	81	87	6
Public telephone stations	235	341	106
Subscribers to city exchanges	11,490	14,035	2,545
Interurban trunk lines.			
Number of lines	81	87	6
Length of lines		2,805,475	
Length of wires		5,610,950	
Private lines	2,240	2,623	383

Although a large number of the telephone systems in Italy were started under private ownership, the state has followed the policy of buying up the systems in the principal centers. The result of this policy is evident in the receipts, which are reported as follows:

1905-1906	fr. 1,644,279.20
1906-1907	" 2,441,758.15
1907-1908	" 8,448,803.49

Wire troubles can be reduced if there is method in your work. Don't try to cure an evil until you have ascertained its true source. This will eliminate hours of wasted energy.

Here and There

Conventions; Kentucky, Paducah, Nov. 15, Winchester, Nov. 22; Canadian, Toronto, November 17.

Dates for Kentucky Association's District Meetings Set.

E. M. Coleman, president of the Louisville Home Telephone company, who is also president of the Kentucky Independent Telephone Association, announces that on Nov. 15, a convention of the members of the western district, Kentucky Independent Telephone Association will be held at Paducah, Ky. It promises to be among the most successful held in this district; from one to two hundred delegates have promised to attend. Telephone operators and owners from all over Western Kentucky will be present, and some telephone interests of importance in Southeastern Illinois, Eastern Tennessee and other neighboring sections will be represented at the meeting.

The eastern district, Kentucky Independent Telephone Association, will hold its convention at Winchester, Ky., on Nov. 22. Although the field through Eastern Kentucky is not so widely extended as the western field, there promises to be a large attendance at this meeting also.

The big state convention will come off in Louisville during the second week in December, according to Mr. Coleman, and a record-breaking attendance will be in evidence when the "Big Tent" of the Independents opens.

Western Pennsylvania Independent Convention.

Members of the Western Pennsylvania Independent Telephone Association, comprising telephone men of western Pennsylvania, eastern Ohio and West Virginia, met October 21 and 22, in the Merchants Hotel, Johnstown, Pa. This was the eighth quarterly meeting held by this association since its organization.

The first day of the meeting was given over to reports of officers and committees, and to routine business. Mr. H. E. Webb, secretary-treasurer of the Association, reported several applications for membership since the meeting held last July, and the officers feel confident that many more will be received.

The rulings of the Interstate Commerce Commission in regard to rates and equipment were discussed. A committee composed of William S. Paca, Oil City; H. E. Bradley, and K. B. Schlotte, Kittanning, was appointed to investigate and report on extension of toll business and facilities, and other matters which would broaden the scope of the Association.

Members of the Association were asked to report on construction undertaken or completed by their companies. Mr. H. E. Webb reported that the Pittsburg & Allegheny company, of which he is secretary-treasurer, has recently completed a direct toll line to Steubenville, Ohio, which eliminates the necessity of calling through Wheeling, W. Va., as was previously done. He also told of the construction of a toll line to New Kensington which gives his city direct connection with Vandergrift, Kittanning and Punxsutawney.

Mr. E. D. Schade, general manager of the Johnstown Telephone Co., reported briefly on local improvements made by the company—the enlargement of the exchanges, installation of new switchboards, and extension of underground system. Many of the visitors inspected the exchanges and system and reports were very favorable.

In the evening of the first day the delegates attended a theatre performance, and the following morning were taken on a sightseeing tour over the city.

At the meeting held the second day a resolution was addressed to the State Railroad Commission asking that body to give an expression of its views on the air line rates for telephone companies as required by the Interstate Commerce Commission.

Another important question considered was that relative to the installation of Independent telephones in government buildings. These two topics were made the subject of resolutions as follows:

Resolved, That whereas the present basis of figuring toll rates is difficult and is not equitable in some cases, and, whereas, we believe the land air line basis of figuring toll rates is much more practical, and will enable us to establish fair and equitable rates between all points in the state of Pennsylvania, and, whereas, we believe the Pennsylvania State Railroad Commission will adopt and recommend the land air basis of figuring all toll rates, and, whereas, we believe a basis of .8 of a cent per land air mile is a fair basis on which to establish toll rates.

Now, therefore, be it resolved, that this association recommends the establishing of all toll rates in the state of Pennsylvania on the basis of .8 of a cent per land air mile, except, however, that there shall be no toll rate established below ten cents, and that the rates for points distant not more than fifteen miles, nor less than ten miles, shall be fifteen cents, and that all rates be established on the five-cent multiple basis.

Whereas, it has been called to the attention of this association that the absence of Independent telephones in the United States district court, Internal Revenue office, and other government buildings in Pittsburg is the result of orders from the departments at Washington; therefore, be it resolved, that this association consider such orders an act of discrimnation, unjust and unfair to the public and to the investors and others interested in Independent telephone development, and, therefore, request the National association to take such steps to bring this matter to the attention of the department heads at Washington, D. C., to the end that this unjust discrimination be removed.

New Company at Guanajuato, Mexico, to Build Long Distance Lines.

The concession which was granted by the state government of Guanajuato, Mexico, to George W. Bryant and associates for the construction of a long distance telephone system and local telephone exchanges has been transferred to the Compania Telefinica de Guanajuato, S. A., which has its headquarters at Guanajuato. The company has a capital stock of $900,000, which is owned by Fernando Pimentel y Fagoaga, president of the Mexican Central Bank of the City of Mexico; Jose P. Bustamante, George W. Bryant, Juan Castelazo and Martin Garza. At a meeting of the stockholders Mr. Pimentel was elected president, and Mr. Bustamante, vice-president. The company will soon start the construction of several hundred miles of long distance telephone lines. These lines will radiate from Guanajuato in all directions, extending to many towns and mining camps of the state.

Many Subscribers for Stock in New Marshalltown Company.

At a meeting of the stockholders of the Merchants', Mechanics' and Farmers' Telephone Co., Marshalltown, Ia., the organization was perfected and officers were chosen. The meeting was well attended, and a total of 107 men subscribed for stock. F. M. Wheeler, of Marion township was elected president of the company, and Robert Harper, of Marietta, vice president of the company. J. B. Cooper, of Marshalltown, was named as treasurer, and N. D. Smith, of Chicago, secretary. Mr. Smith's office, however, is to be occupied only during the period of organization, and Mr. Smith's resignation was handed to the board of directors, to be accepted at the board's pleasure. The

members of the board of directors, elected at the meeting, are N. O Keen, of LeGrand; George C. Ogier, Timber Creek; Charles R. Lynch, Vienna; W. R. Lippincott, Dillon; J. L. Wylie, Gilman; Charles Landon, Washington; W. H. Ogan, city; F. E. DeWitt, Washington, and M. W. McKibben, Liscomb.

New Independent Company to Be Organized in Kentucky.

The residents of Brownsboro, Goshen and Harrods Creek, Ky., have united in an effort to have Independent telephone service in that section, which comprises portions of Jefferson and Oldham counties. A committee has been appointed, composed of three prominent citizens of the above-named cities which has obtained the co-operation of President E. M. Coleman, of the Louisville Home Telephone company, looking to the establishment of telephone service in the Jefferson-Oldham county district, which will be connected with the Louisville Home lines. E. L. Spear, of Brownsboro, H. A. Clore, of Harrods Creek, and B. F. Ingraham, of Goshen, compose the citizens' committee, and President Coleman has already formulated definite plans for the establishment of the new company.

Des Moines Consolidation New Promise for Next Month.

The comet has come and gone; crops have been sown and harvested; flying machine records for height and distance have been broken and rebroken; the world's record for ballooning has been smashed and the breaker thereof lost in the Canadian wilderness; Teddy has toured west and south, and east and west again.

But the Des Moines cut-over has not yet come.

A statement in the Des Moines Register of October 15 says: "The consolidation of the Iowa and Mutual telephone systems in Des Moines will be completed a few days after November 1, according to the statements made yesterday by officials of the Iowa company."

Some authority, that!

Flat Rates Desired.

Since the hearing on October 24 by the Maryland Public Utilities Commission for Baltimore upon the new schedule of rates submitted by the Chesapeake and Potomac Telephone Co., and upon the abolition of the present unlimited service rates in Baltimore, letters and affidavits from leading commercial, business and financial houses of Baltimore have poured into the office of the Utilities Commission protesting against the elimination of the unlimited service and urging that a system be devised whereby a subscriber may be enabled to keep an accurate count of the calls made from a measured rate telephone.

The Utilities Commission, together with its secretary and consulting engineer, are still at work on data gathered at the hearing on October 24, when Vice-President Bethell presented arguments in favor of the new schedule of rates proposed.

That the discussion of the new rates and the abolition of unlimited telephone service will be protracted is evidenced by statements made by Commissioner Laird of the Utilities Commission. The commission has done nothing as yet toward examining the books of the Chesapeake and Potomac company or having expert examinations made, as it has authority to do under the law. "When will the Commission begin an examination of the company's books?" Mr. Laird was asked by TELEPHONY'S correspondent.

"We have not reached that stage," he replied, "because our examination or hearing of October 24 was merely preliminary. We have just laid the foundation to begin our work. We won't examine the company's books right away, because in a few days it will issue its annual report and we are waiting for that. This report will prove the basis of any financial investigation. I do not mean to imply that the scores of complaints and letters we have received are not a proper basis for a financial investigation. In the absence of the annual report we could go ahead on the complaints. They would be an incentive to go into the financial condition of the company. But as the annual report is coming out soon, we think it best to wait and find out what it contains. The statements of the telephone company may be sufficient answer to the complaints. We cannot tell, thus far in advance, what it will be necessary to do, but in our investgation we will go as far as circumstances seem to require."

A new point in the war in Baltimore on the Chesapeake and Potomac Telephone Co. is whether the company is under any legal obligations to continue its grounded circuit at a lower rate. This point was brought out very prominently in a letter from the law firm of Gill, Preston & Field of Baltimore, which says that the company told them "they would not get any service over the grounded circuit telephone." John Gill, one of the members of the members of the firm is a member of Congress from Baltimore city.

When the Utilities Commission had its hearing on October 24, Bernard Carter, counsel for the Chesapeake and Potomac company said he had given Mr. Bethell an opinion that the company was no longer under any legal obligation to continue the grounded circuit service.

This condition is presumed to arise from the action of the Maryland Legislature in bestowing its control of corporations on the Public Utilities Commission.

It happens that many business houses in Baltimore have the grounded circuit service. They use it to send messages for which it is supposed to be as satisfactory as the metallic service, and they receive all messages over the latter service, for which there is no charge for incoming messages based on use.

In concluding their letter of complaint to the Utilities Commission, Messrs. Gill, Preston & Field say: "It seems to us that corporations of the character of the Chesapeake and Potomac Tel. Co. should be held firmly down to a reasonable profit on their investment in this field, and that they should receive protection only up to this point; and that the public should be protected by the lowering of the telephone rates and by the exercise and control which the Utilities Commission has been given by the Legislature in the public interest, and that all the facts should be construed in favor of the public and against the corporation of this character, in view of the large amount of money which it has made out of this community and, we are informed, still continues to make."

Mr. Enoch Harlan, a well kown lawyer of Baltimore, who was the author of a bill introduced in the last session of the Maryland Legislature, designed to regulate telephone rates in Baltimore, says, in his letter to the Utilities Commission: "We should have unlimited telephones until such time as the company shall perfect a device for registering a call in the subscriber's office each time one is made, and a device that shall register so that if the subscriber does not get to talk with the person he desires to talk to the charge shall not exceed one cent. The price per call after the maintenance charge of about $12 a year is provided for should be precisely the same for the subscriber who uses 50 calls a year as for the subscriber using 5,000."

Annual Meeting of U. S. Company Postponed.

The annual meeting of the U. S. Telephone company has been postponed until Dec. 19 by the directors in order to give the firm of J. P. Morgan & Co., owners of a number of Independent plants in Ohio, sufficient time to go over the audits of the properties of the company which have been filed in the New York office. The meeting was to have been held at Cleveland, Oct. 27. The board of directors declared the usual quarterly dividend of 1½ per cent on the preferred stock of the company, payable Nov. 15 to stockholders of record Oct. 31.

The annual meeting of the Cuyahoga company, scheduled for Oct. 31, was postponed until some time in December for

the same cause as the postponement of the annual meeting of the U. S. company.

Rumors have it that there may be a merger of all the Morgan properties in Ohio and Indiana into a giant corporation which will have its stocks and bonds listed on the New York stock exchange. Local officials of the company refuse to make any statement in that matter other than they know nothing of the proposed merger. So far no improvements or extensions have been authorized by the New York firm. Estimates of the amount of money to be spent in improvements and betterments on the Columbus property and on all the exchanges of the U. S. company have been furnished by engineers.

According to Secretary W. L. Cary, of the U. S. Telephone company, the reason for postponing the meeting was the agreement made with the trustees of the voting pool before the sale of the property to the Morgan interests. Since the injunction as to voting the stock as far as J. P. Morgan & Co. has been dissolved, there was nothing to stop the meeting excepting the trustees of the voting pool having disqualified themselves from acting several months ago. It will require a meeting of the voting pool and the election of new trustees before the annual meeting can be held. This will require notices of 30 days and a number of other formalities.

Will the Telephone Operators Organize?

The question of organizing the telephone operators throughout the country into an association to be affiliated with the American Federation of Labor is soon to be considered at the annual meeting of the labor organization to be held at St. Louis, Mo., November 14, the idea is to be acted upon. While the theme is not new in labor circles, it is one that has not been aired to any extent in public.

Service Borrowers Checked in an Indiana Town.

C. W. Galloway, manager of the Shawnee Telephone Company, Stone Bluff, Indiana, has succeeded in doing away with a good deal of the nuisance of borrowing service. Over a year ago he started the practice of charging all non-subscribers a message fee of 5 cents. In a letter to TELEPHONY some time ago, he said,

"Replying to your inquiry in regard to my charging non-subscribers a fee of five cents for talking through my exchange, I think it is a very good plan, and should be adopted by all exchanges. The non-subscriber who insists on talking free is nothing more than a bum always trying to ride a free horse, and I have still to receive my first thanks for allowing him or her to talk for nothing.

"What I mean by non-subscriber is one who does not pay a subscription to any company or individual for service. If a subscriber to any other exchange wishes to use our telephone there is no charge for this.

"The extra revenue we collect is not worth the time and bother it takes, but where we get our largest returns is through the extra subscriptions we gain. Before we adopted this plan one telephone answered for about three families. Now they either subscribe for a telephone or pay for every message, and I find the messages are not nearly so numerous as before. It not only pays by gaining extra subscribers but improves the service by stopping a lot of useless calls. As a rule the man who has no business at all holds the lines longer than our best subscribers."

In reply to a letter asking how he enforced the payment of this toll when a non-subscriber was using a neighbor's or other instrument Mr. Galloway explained that on the business and other lines the operators knew the voices of the subscribers pretty well, and when another called he was asked either to come to the office and telephone, or the subscriber was asked to O. K. the message and collect the fee. He stated, however, that even at the best many calls went through without payment. He says that many people complained at this charge, and on the ground that other exchanges did not make this charge, and stated that he believed if all the small exchanges would adopt this plan it would be easier to enforce it all around.

Good News from a Kansas Company—a Hit at Free Country Service.

The operators and managers of many of the smaller telephone companies in Kansas are sending most favorable reports to TELEPHONY, and are all impressed with the good future which is before them.

One of these companies which writes a good letter about its business is the Blue Rapids Telephone Company, of Blue Rapids.

Mr. Strang, president and manager, says:

"The Blue Rapids Telephone Co., as I suppose is the condition of most telephone companies, maintains so steady a growth as to constantly require the reinvesting of all of its profits in new lines, telephones and apparatus. Two years ago we decided to get in shape to not only meet these growing conditions, but to give the best service and began the standard reconstruction of this system. We first purchased new central office equipment, installing a three-section multiple board, common battery with up-to-date main frame and sneak current and lightning protection and have been engaged since that time in making standard the outside equipment. If the present fine weather holds thirty days longer we believe we will have an entirely up-to-date telephone system with ample room for growth for years to come and a low cost of maintenance.

Each of the twelve towns, of Marshall county, has its own telephone system, four of which are farmers' mutuals. These farmers' mutuals have caused some trouble by wishing free toll service throughout the county. But as they have become older and realize the expense of maintenance and the fact that free service over toll lines would destroy their commercial value and render them useless they have become willing to accept the agreement, which exists among the telephone companies of the county, of a ten cent toll to subscribers, which toll is divided between the sending and receiving exchange. The new mutual however, not understanding the demands of the commercial public for proper toll service and the expense of maintenance, takes up anew the fight for free toll service, as is the condition which exists at present with a new farmers' mutual formed last year. So it seems that nothing but experience will bring about a cure for erroneous ideas that exist regarding the telephone business, its cost of maintenance and its profits.

"The fact that the cost of building, the cost of maintenance, the cost of operation, kind of service, and the quantity and quality of the same are all different in different countries and communities, make it so that no set rule or rate can be adopted, but must be worked out by each individual company and in this work nothing but time and experience seem to avail. The various companies of this vicinity have learned the lesson that good equipment is necessary to true economy and good service; that free toll service and telephone service at inadequate rates makes impossible good equipment and maintenance and that the general public is always willing to pay fair rates for good service. So while the telephone companies of this county have in the past accumulated no bank account, most of them are on a sound financial footing and the outlook is in accord with other business of the country.

Protection at Railroad Crossings.

The Indiana Railroad Commission has taken steps to correct conditions where telephone, telegraph and other service wires cross interurban and other high tension wires with a view to guarding against the escape of dangerous current by the installation of guards to prevent such wires from coming in contact.

From Factory and Salesroom

Complete Information on Belden's Cords and Wire.

The quality of Belden cords, made by the Belden Manufacturing Company, 2300 So. Western Ave., Chicago, has been established by the satisfaction given in their use in hundreds of exchanges. The requirements of the field are so diversified that the company has just taken a step to facilitate ordering the correct cords, terminals and other supplies which will undoubtedly meet with the approval of managers wishing for a convenient way to keep posted on this subject.

A heavy, clearly printed, amply illustrated placard, suitable for hanging upon the wall of the terminal room or supply department has been prepared by the company. It gives full information, in the form of tables and descriptive text and illustrations, covering every style of cord and terminal made by the company, telephone switchboard cords, Belden's steel gains, adhesive tape, paraffine wax, transmitter and receiver cords, as well as switchboard cords, Belden's self-fluxing solder with either rosin or tallow core, paper splicing sleeves for cables, Belden's insulating compound, and last, but by no means least, the company's rubber covered wire made in standard qualities.

The company has in its enlarged quarters installed a rubber covered wire department, equipped with modern machinery, so that it is in shape to turn out high grade material.

On account of the way in which it facilitates ordering and keeps the exchange manager, purchasing agent, and installation and maintenance crews posted on all cordage and other equipment, the new guide is certain to win hearty approval. It is sent free on request.

Elliott Cresson Medal Awarded to the Automatic Electric Company.

The Franklin Institute of Philadelphia, Pa., has awarded its Elliott Cresson medal to the Automatic Electric Company of Chicago, Ill., for its development of the automatic telephone system.

A letter notifying the company of the award, under date of July 15, 1910, after recitng the patents already granted upon which the system is based, and referring to patents now pending, notably that of the line switch developed by Mr. Keith, says:

"The above system of telephony was developed and perfected, first, with a view of eliminating certain defects and annoyance inherent in the manual systems used universally throughout the world, caused by the element of human control in the form of woman operatives; second, to reduce the necessity of depending upon human control; third, to reduce the initial and operative cost of telephone systems; fourth, to give more rapid and accurate service under all conditions and thus increase its usefulness.

"The automatic system of telephony as now perfected, bears out very thoroughly its title 'Automatic.'"

After a brief reference to the method of operation, the letter goes on to say:

"The apparatus has been fully described in the Journal of the Franklin Institute for March, 1909, and in the proceedings of the American Institute of Electrical Engineers for the years 1908-1910, and has been in operation a number

of years in large towns and cities throughout the United States and elsewhere.

"The committee has corresponded with users of the 'automatic' system of telephony and has received favorable reports therefrom. Some of its members visted and inspected the exchange at Wilmington, Del., which has a capacity of 300 subscribers.

"After a thorough investigaton of the practicability of the system, the Institute awards the Elliott Cresson medal to the Automatic Electric Company of Chicago, Ill., for its developments in automatic telephony."

In February, 1848, Elliott Cresson of Philadelphia bequeathed to trustees for the Franklin Institute of that city a sum of money to be held and the interest used for the awarding, from time to time, of a gold medal to such parties as the Institute may deem worthy of receiving it. The awards in all cases are made either for some discovery in the arts and sciences, or for the invention or improvement of some useful machine, or some new process or combination of materials in manufacture, or for ingenuity, skill or perfection in workmanship.

Among the awards made, which establish the high grade of achievement necessary to win this medal, are those to Roentgen for his discovery of the X-Ray, and to Madame Curie for her investigations in radium.

The medal bears on one side a medallion likeness of Elliott Cresson, with the marginal inscription, "Elliott Cresson Medal, A. D. 1848." On the opposite side of the medal is a marginal inscription, "Awarded by the Franklin Institute of Pennsylvania," and in the center is engraved the name of the party to whom awarded and the date of award.

THE HARVARD ELECTRIC COMPANY, Chicago, Ill., reports a healthy volume of business this fall, particularly in its wire connectors. The company publishes catalogs covering its products fully.

THE INTERSTATE LUMBER CO., of Cleveland, Ohio, is now handling the Southern White Cedar poles made famous by the Southern Exchange company, of New York. Vice President Mitchell of the latter concern, has been visiting in Ohio and Indiana on business matters recently.

Bulletin on Recording Thermometers.

The Bristol Company, Waterbury, Conn., has just issued a 32-page bulletin, No. 126, of Bristol's Class 11 Recording Thermometers. This bulletin is profusely illustrated and shows the uses to which this instrument can be put that are advantageous to the user. The temperature records are made from actual tests reproduced and in this way give the best possible testimonials in its favor. Aside from this instrument the company also manufactures a variety of recording devices, such as recording volt-meters, ammeters, shunt ammeters and time recorders.

A Switch That Gives An Operator Remote Control of Rural Line Extensions.

A switch giving remote control of substation lines to the operator at the regular office is going to revolutionize the rural telephone business.

Good service and the cross-roads switchboard are two items that never go together. Service brings in revenue. The best rates per station for rural line telephones are obtained where the best service is given. The greatest number of paid toll connections come from the stations where the service is good. The one condition which absolutely cannot be improved, and which does more than anything else to prevent the giving of good service, is the cross-roads switchboard handled by a farmer's wife, or child, who puts in most of her time in household duties, or by a boy in some little store.

Sometimes these line terminal switch points are the gossip centers of the neighborhood, and everybody knows what effect this has on increasing telephone business. Yet this is a personal factor which no company can control. It must put up with the kind of operating it can get, and pay for it, too.

Another thing is important. That is the ratio of investment to revenue. Join up five or six miles more wire and half a dozen more stations to a fifteen-party line, and what does one get? Interest to pay on the money tied up, operating expense, and depreciation—these are sure—but certainly the line conditions are not such as will help get a good monthly rate for every telephone, or build up a short haul toll business.

Suppose a machine could be built that would enable these five or six stations out beyond the end of the present line to be connected to the main line or the exchange only when one of them wanted to talk beyond his own little territory. Then have the connection and disconnection made at the main office, by your own operator, who is paid for attending to business, and your business all the time.

Do you get the point?

No balling up of the ringing code, no addition to the amount of jangling bells on the main line. Above all the switching is done by a *machine*, which can be put up on a pole instead of in a farmer's house, if necessary, and worked by your operator.

Suppose in addition to this the machine could be used for instantly connecting two farmers' lines, extending across country toward each other from two different exchanges, into a toll circuit, whenever subscribers in either exchange wanted to talk across. Suppose that these circuits could be separated instantly, and kept separate normally, and each used as a farmer's line to its own exchange—and again have no farmer's wife relied upon to do the switching.

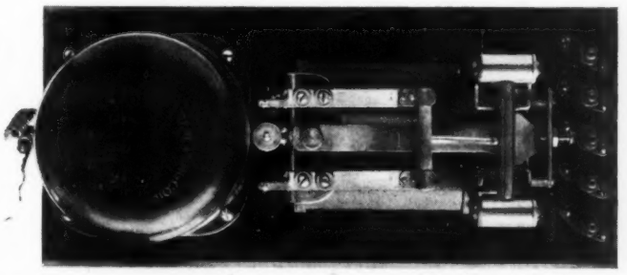


Fig. 2—Type of Switch Used to Connect Main Line to Extension Carrying Only Subscribers' Telephones.

Who has not heard managers wish for such a thing and dream about how to do it?

At last it has got beyond the dream stage.

TELEPHONY has had in its office for a few days a machine which actually does this work. It is built on thoroughly scientific principles, and the mechanical construction is first class—the kind that is safe to put in a farmer's house or in a box on a pole. It has been tested out under severest conditions, covering the fields above outlined, and is reported by practical telephone men to stand up and do the work month after month.

The manufacturers are now getting ready to put it on the market. They have made repeated experiments with it in service, and have let disinterested managers put it on their lines and try it out, and having become convinced that it will do what is expected of it, are at last ready to let the public know of its existence.

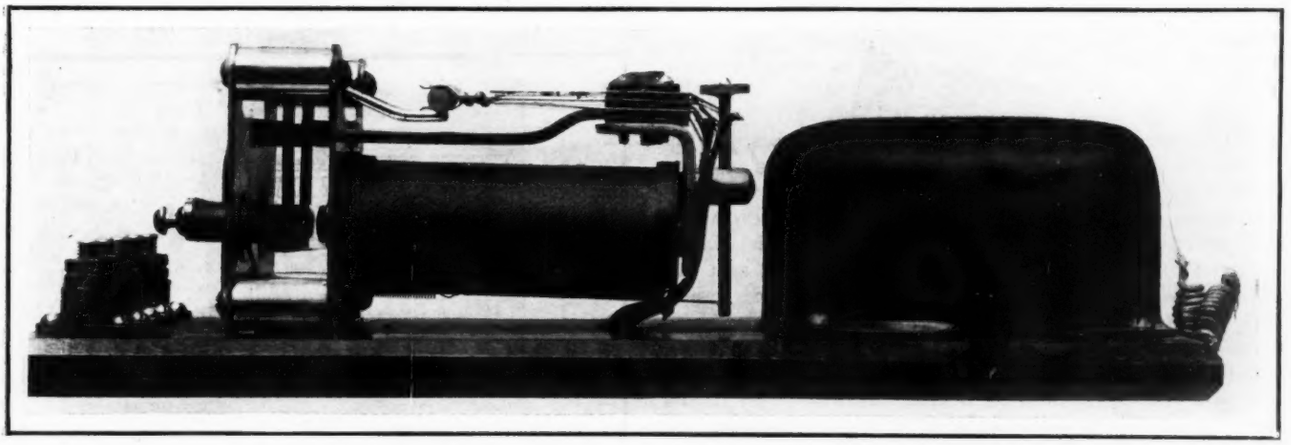


Fig 1—Side View of Switch Giving Operator Remote Control of Through Connections to Extension Subscribers' Line.

The machine is built in two types, one for connecting outlying short lines to a main line with bridged stations; the other for temporarily connecting two farmers' lines into a through line between exchanges so that a toll message can be sent. Although built on exactly the same general principles, there are differences between the two machines which fit each for its particular service. The latter machine is called the R. & L. Sub-Station Switch. The machine for extending the rural line to remote substations without idle investment has as yet no name, and the manufacturers are still looking for a trade name which will be thoroughly descriptive of the switch so that a

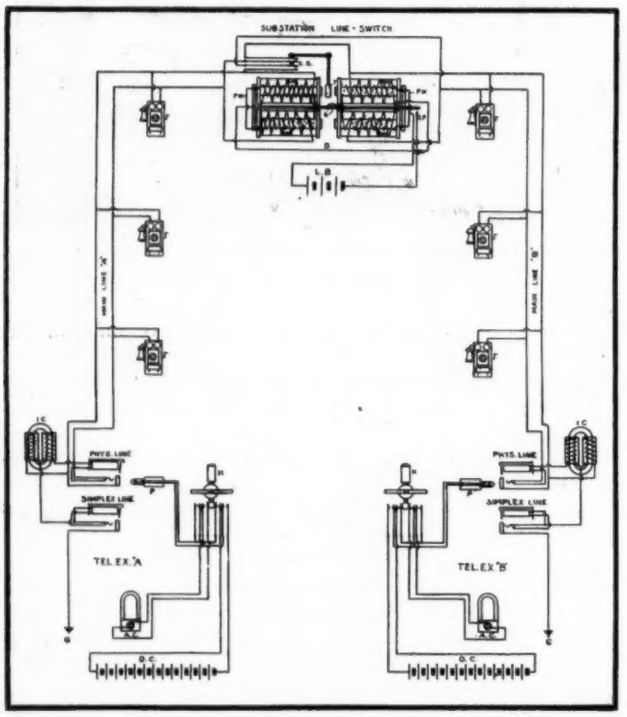


Fig. 3—Circuit of Switch for Through Toll Connection, and Switchboard Wiring.

telephone man who sees the name will know at once what it is for. This is considerable of a puzzle, and the manufacturers invite practical men to forward their suggestions.

To understand the operation of this switch it is necessary to appreciate, in the first place, that it works only on a metallic line, but there can be as many bridged stations on this line as a company desiring good service would be willing to put there. The electrical principle upon which the operation is based is simply that the switch will be operated to connect the lines by a direct current sent out over the two sides of the wire in parallel, acting as a simplex circuit, and that alternating current, as furnished by a ringing generator, when sent over the metallic circuit will demagnetize the switch, knocking down the connection and leaving lines with which it is associated in the same operative condition as if it were not present. In other words, this plan gives the operator at the regular central office control of a remote line.

In the switch for connecting a main line to an extension carrying only telephones, and not connected to a switchboard at the other end, the connection between the main line and the extension is through a separate repeating coil, so there is no chance of cross talk, or any disturbance passing from one line to another. When the operator wishes to call a party on the main line she inserts a plug in the metallic jack and rings with generator in the regular way. Nothing happens in the switch. The subscriber answers. If she wishes to call a party on the extension she inserts her plug in the simplex jack, and this is able to ring through the primary of the repeating coil to its grounded terminal; this ring is repeated to the extension and calls the party. Then she connects her battery to the jack of this line by simply throwing the key *K* wired into her ringing common. This key, by the way, is the only place where it is necessary to change the switchboard wiring, other than in the drop. The battery pulls up the light armature extending horizontally above the coils (Figs. 2, 5) in a momentary impulse. This throws a local current from the battery at the switch through the windings represented by the dotted lines, for a momentary impulse, strong enough, however, to pull up the steel armature lying at the left of the coil heads and magnetize it.

As this steel armature is pulled up it operates, through the attached levers, the contacts above the coils making a metallic connection through to the repeating coil which has one winding in the extension line.

The retained magnetism in the steel armature holds it tightly against the cores until the magnetism is destroyed by alternating current from ringing, passed through the coils after subscribers are through talking. It is a well known principle that alternating current will demagnetize an armature. By the employment of this simple device the connection is made permanent, without supervision, during conversation, but if a subscriber fails to ring off release can be effected by the operator's ringing.

An incoming call from the main line to the exchange comes in on the metallic drop, while an incoming call from a substation on the extension comes in on the simplex drop. It is not necessary for the operator to operate the substation switch in order to answer the outlying subscriber. She can answer the call by simply inserting her plug in the simplex jack, and can handle this call exactly as in a phantom; that is to say, the switch remains unoperated at all times excepting when connection is desired between main line subscribers and the outlying line subscribers. Then, and only then, is this switch put into operation for the purpose of making direct connection between such lines.

This operation will be clear from an examination of the circuit diagram, Fig. 1, showing merely the switch and

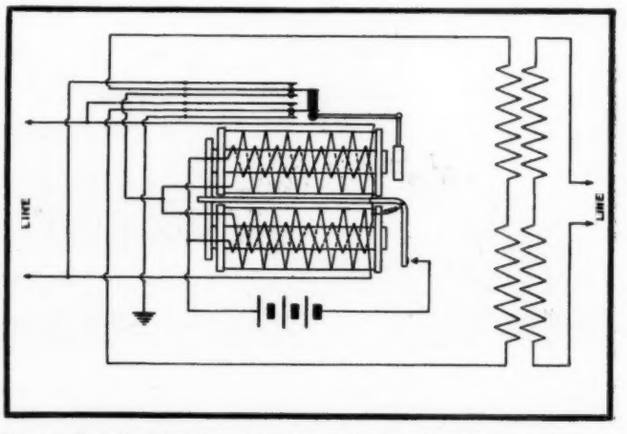


Fig. 4—Detail Diagram, Showing Wiring of Switch Shown in Figs. 2 and 3, for Line Extension Control.

repeating coil, in connection with Fig. 3, showing the central office end.

The operation for the switch adapted to connect two rural lines together to form a through circuit between exchanges, adaptable to toll connections, is on the same general electrical principles. But in this case the circuit is two ended, as shown in Fig. 3, and the operator at either

exchange can control the operation of the switch so that she may connect subscribers on her end to those on the farmers' line through the switch, or to any other line connected at the other exchange, by the intervention of the operator at the other exchange. In this case either operator can effect the disconnection of the circuit at the substation switch simply by ringing, but cannot make a toll connection without the other operator knowing it. The construction of this switch is shown in Fig. 5, showing the four-coil instrument.

As the operation of this switch has been tested out in practice, and the mechanical construction perfected so that it will stand up under the conditions of general use, the next point for discussion is the financial end. As the switch thus gives the exchange operator control of outlying lines without any intervening operator, it will enable subscribers to be brought in from a considerable distance without damaging the service on the main line. There are many places where it will save running out a new line to an outlying neighborhood, or overloading or disturbing the make-up of a line on which the relations of subscribers have become well established.

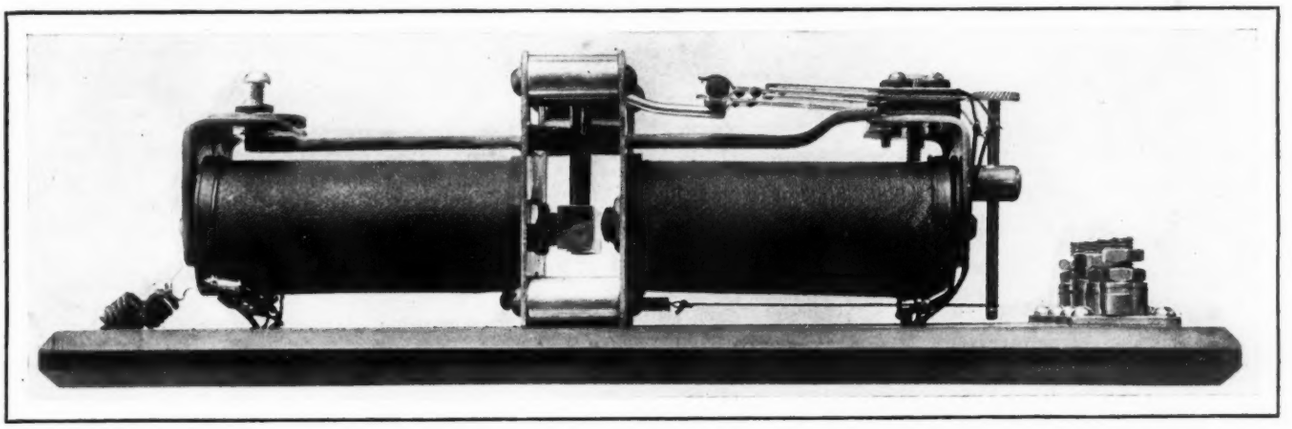


Fig. 5—Side View of the Switch Which Solves the Problem of Toll Connections Over Lines Having Bridged Stations.

Furthermore, this machine works as well at night as in the day time, and every one who has been bothered by the little outlying switch in a farmer's house knows what this means.

The saving to the operating company is made up of the following points: The expense of an operator at the substation; the monthly rental of telephones on both circuits at the substation; substation equipment such as cords, plugs, transmitters, receivers, etc., and maintenance thereof; expense of having lines tied up through inattention of substation operator; wires in operation for through service to stations grouped at the extreme end; separate circuits for toll, or trouble and expense in round-about switching.

From a service standpoint the toll switch eliminates the objection of using lines with bridging stations, and a permanent connection between exchanges, for toll service. It makes it possible to accurately time and check toll messages on a central checking system; cuts out the inconvenience and expense incident to tying up of lines by delinquent sub-station operators. The line extension switch gives a convenient way to get the maximum revenue producing load on a long line with minimum service interference.

The one point to bear in mind in connection with this proposition is that it absolutely places control of the remote circuit in the hands of the trained operator on regular duty at the main exchange, and any operating man familiar with rural line operating troubles can see the possibilities in the way of benefiting his service and revenue once this is assured.

Mr. J. Henry Swanson, the inventor of this switch, is an experienced telephone man and has been perfecting his invention, covered by a U. S. patent, through several years. All rights to the switch, however, are owned by the Robinson-Loomis Electric Co., Minneapolis, Minnesota, with whom Mr. Swanson is connected, and who will manufacture and market it.

The president of the Robinson-Loomis Electric Co. is Mr. T. F. Robinson. He was formerly in the telephone business and built up a chain of prosperous operating companies from which he retired advantageously some time ago. His solid knowledge of operating conditions led him to appreciate the field for this switch. Through his personal character, business methods and financial strength, customers of the Robinson-Loomis Electric Co. will be assured not only of fair treatment and promp action upon orders, but of the permanence of the proposition, which is justified by the merits of the switch.

Convenient and Durable Telephones of Ericsson Manufacturing Company.

Convenient and durable telephone apparatus is the foremost aim of the Ericsson Manufacturing Co., Buffalo, N. Y. These are the foundations upon which the company lays its claim for recognition and increased sales. These features have been prominent with this concern for a long period, and its handmicrophone (Hand-Mike) and steel telephones comprise two specials that are well known in the field.

In the office or home the handmicro is a modern and convenient type of telephone. It is a good thing for busy business people; simple and reliable, and operated at a saving of time and cost reduction. It is an ideal business telephone, and is in no danger of being knocked off the desk. These telephones are made for both local battery magneto service and for common battery service. Advantages found in this type of telephone make it adaptable to the needs of subscribers who are hard to please.

The steel telephone is worthy of favorable consideration, and the company is now offering special inducements to purchasers. It is finding the sale for these instruments so large that they can readily be sold at the price of wood instruments. Durability is the strong point in these instruments and on this claim alone the Ericsson company is appealing to a larger number of users. Illustrated data and prices are mailed to all those requesting them of the company.

Condensed News Reports

Officers of companies are earnestly requested to forward us promptly all financial and other statements as soon as issued and any items of interest as to their plants and systems

PERSONAL.

Mr. H. S. ROBERTSON, manager of the Pittston division of the Consolidated Telephone Co.'s of Pa., has been made superintendent of the Anthracite Telephone Co., with headquarters at Hazleton.

MR. W. H. ANDREWS, it is reported, will succeed A. B. Clark as manager of the Home Telephone exchange at Lawrence. Mr. Clark will go to Kansas City as superintendent of several branches.

MR. J. W. WASH, for several years general superintendent and manager of the Cynthiana Telephone Co., at Cynthiana, Ky., was recently promoted to the position of general manager of the Maysville and Vanceburg Telephone Co., at Maysville, Ky. Mr. Wash is succeeded at Cynthiana by B. F. Chambers.

MR. JAMES F. KINDER, assistant secretary of the Duplex Metals company, left New York last week with Mrs. Kinder to make their home at Portland, Oregon. Mr. Kinder will open a branch office there about December 1st and develop business on the Pacific coast along the lines which have made him and his company successful elsewhere.

OBITUARY.

HENRY LANGDON BREWSTER, a staunch Independent telephone man, and a director in the Federal Telephone & Telegraph Co. of Buffalo, died at Rochester, N. Y., on November 1. Mr. Brewster has been a prominent investor and firm believer in the Independent telephone business, and was widely known throughout the telephone field.

NEW COMPANIES.

WATHENA, KANS.—Farmers and others interested in organizing a mutual telephone company met here and organized by electing the following directors: C. C. Rennick, August Haupt, Jacob Gunselman, B. Schmille, Wm. Denning, Frank Foley, Geo. Gummig, G. A. Dubach and Wm. Schuler. C. C. Rennick was chosen president, Geo. Gummig secretary and Jacob Gunselman treasurer.

WISNER, NEB.—The Eastern Nebraska Telephone Co. has been organized by business men. The capital stock is authorized at $10,000. Construction of a toll line between Beemer and Wisner has been started.

CLEVELAND, OHIO.—The National Telephone Supply Co. has been incorporated with a capital stock of $20,000. The incorporators are Wm. H. Marlatt, F. H. Pelton, M. Jenkins, F. B. Bolton, M. B. Campbell.

WELLSVILLE, OHIO, COLUMBIANA CO.—The Yellow Creek Telephone Co., with a capital stock of $1,000, has been incorporated by Robert Boyd, Laurence Boyd, Homer Taloon, Samuel G. Jarvis and Chas. Y. Sweringer.

CALUMET, OKLA. (Canadian Co.).—The South Calumet Telephone Co., with an authorized capital of $300, par value of shares $15, has been incorporated by Frank Hornberger, W. F. Ridenour and P. O. McGowan.

OLIVER SPRINGS, TENN.—The Oliver Springs Telegraph and Telephone Co. has been incorporated by J. C. Edwards, Nancy E. Edwards, Thomas England and others.

CONSTRUCTION.

IMPERIAL, CALIF.—Telephone connections with Los Angeles will be completed soon. Since the valley was opened for settlement there has been a great demand for this connection, but until this year it was not possible. Now the Imperial Valley telephone system is building the connections. There are 190 telephones in the town of Imperial, 100 in the next largest town, and almost as many in Brawley, Calexico and Holtville. The Eastside Mutual Telephone Co. is just completing its system, some of the telephones already being connected. It was built by the ranchers, each subscriber putting up $100. There are already 100 subscribers and others are coming in.

WILLOWS, CAL.—A telephone line is to be constructed from Poison Glade, near Paskenta, to the Covelo Ranger station. At present communication with the western part of the forest is difficult, and this line will be a great convenience. A line will also be constructed from Poison Glade to the ranger station on Black Butte, and continued from there to the lookout station on Snow Mountain. Both of the latter places are over 7,000 feet in altitude and are used as fire lookout stations, being two of the highest points in the forest. This line from the ranger station on Black Butte to Snow Mountain will be kept up during the summer season only.

FT. WAYNE, IND.—The Home Telephone & Telegraph Co. has found its present switchboard capacity too small to take care of the constant demand for service, and has placed a contract for a section with 300 line capacity.

MUNCIE, IND.—The Delaware and Madison Counties Telephone Company is getting ready to install 15,000 feet of underground and aerial cable, during the month of November, 1910, which will add seven hundred more cable pairs to the exchange. A new toll line will also be built to Gaston, Indiana.

MANNING, IA.—The Manning Telephone Co. has moved its exchange into larger and more commodious quarters. Soon the wires will be taken off the main streets and strung in cable through the alleys.

PERRY, IA.—The Perry Telephone Co. is making some improvements to its system. Seventeen hundred dollars is being expended. A new switchboard section is being installed in Williamstown.

DETROIT, MICH.—The Home Telephone Co. has received contracts for the installation of private branch exchange systems in the plants of Berry Bros., Ltd., and the Hammond, Standish Co. During the week of Oct. 22, 28 subscribers were added to the list.

DEERWOOD, MINN.—The Deerwood & Bay Lake Telephone Co. has just completed a line from that city to Crosby. This will soon be extended to Ironton.

KANSAS CITY, MO.—The Home Telephone Co. will build two additional stories to its South Side exchange.

MEMPHIS, MO.—At the annual meeting of the Independent Telephone Co., Mr. Stevens Adams was elected a director. New poles will be purchased for some of its lines.

MOUND CITY, MO.—The Independent Telephone Co. is replacing a considerable number of the poles in its system with new orders.

THERESA, N. Y.—The Theresa Telephone Co. is rebuilding many of its lines, getting ready for the stormy weather. The line between that place and Lafargeville is practically completed.

DUNCAN, OKLA.—The Chickasaw Telephone Co. has just installed a modern switchboard in its exchange. Other improvements to the exchange equipment and lines are contemplated.

COLUMBIA, PA.—The Columbia Telephone Co., owing to its present quarters being too small, has purchased a building and site at the corner of Alley H and N. This will be remodeled for its purposes as an exchange. A new common battery switchboard will be installed, and the wires in the city will be enclosed in cable. This company has been meeting with success since its organization by H. E. Young, who is now president and manager of the company.

DOYLE STATION, TENN.—The Doyle Telephone and Telegraph company, a new corporation, has announced its intention of constructing 60 miles of line, connecting Sparta, Tenn., and Spencer, Tenn.

WARSAW, WIS.—The Marathon County Telephone Co. is arranging for the construction of 18 miles of line during next spring.

KATALLA, ALASKA.—Citizens of that place have organized the Katalla-Cordova Long Distance Telephone Co., and a line will be constructed connecting these two places.

CHARLOTTETOWN, PRINCE EDWARD ISLAND, CAN.—Telephone communication between Nova Scotia and Prince Edward Island will be established in the near future. The Maritime Telephone and Telegraph Company of Nova Scotia has commenced work on the laying of a cable across Northumberland Strait, from Waterside, 9 miles from Pictou, Nova Scotia, to Wool Island, near Charlottetown, Prince Edward Island. The distance is about 35 miles.

The Nova Scotia telephone exchanges have connections with those in New Brunswick, Portland, and Boston, and thus communication by telephone from points in the United States to Prince Edward Island will be established. There is only one other cable connecting Prince Edward Island with the mainland, which is owned and operated by the Anglo-American Telegraph Company.

The Prince Edward Island Telephone Company has now established telephonic connections with every part of Nova Scotia. The telephone is found in many farmhouses. The rates charged for telephone service on Prince Edward Island to farmhouses are $18 per year; in the cities and towns, $18 per year on a four-party line, $20 per year on a two-party line, and $24 per year on a special line. Long-distance rates, if to a point more than 20 miles from the exchange, are 25 cents for 5 minutes' conversation; if less than 20 miles, 15 cents.

BELIZE, BRITISH, HONDURAS.—The first and only telephone exchange in British Honduras was installed at Belize in 1905, the equipment being of American make. There are at present 176 subscribers and 198 instruments, and an independent fire alarm, ground circuit, with nine telephones. There is a line of 100 miles, north to Corozal and Consejo, 8 instruments; south to Punta Gorda, 90 miles, 11 instruments; west to The Cayo, 60 miles, 4 instruments; the same wire on these circuits being used for telegraph service. The use of the telephone is increasing, and an exchange will soon be established at Stann Creek, a town 32 miles south of Belize, the railway terminus. The telegraph and telephone service in British Honduras is a governmental department, of which Morton Cuthbert is superintendent.

ELECTIONS.

ETNA MILLS (Siskeyou Co.), CAL.—The annual meeting of the stockholders of the Siskeyou Telephone Co. was held and the following officers were elected: H. Dannenbrink, of Gilta, Cal., president; A. Dannebrink, of Gilta, Cal., vice president and superintendent; M. B. Beem, of Fort Jones, secretary; A. H. Barr, of Etna Mills, treasurer, and Charles L. Willard, Jr., of Etna Mills, general manager. A transfer of stock has been made whereby Charles L. Willard, Jr., who has managed the company for the past five years, has become one of the stockholders.

MARSHALLTOWN, IA.—At a meeting of the stockholders of the Merchants', Mechanics' and Farmers Telehpone Co., held Saturday afternoon in the east court room, organization was perfected and officers were chosen. The meeting was well attended, and a total of 107 men subscribed for stock. F. M. Wheeler, of Marion township, was elected president of the company, and Robert Harper, of Marietta, vice-president. J. P. Cooper, of this city, was named as treasurer, and N. B. Smith, of Chicago, secretary. Mr. Smith's office, however, is to be occupied only during the period of organization, and Mr. Smith's resignation was handed to the board of directors, to be accepted at the board's pleasure. The members of the board of directors, elected at the meeting, are N. O. Keen, of LeGrand; George C. Ogier, Timber Creek; Charles R. Lynch, Vienna; W. R. Lippincott, Dillon; J. L. Wylie, Gilman; Charles Landon, Washington; W. H. Ogan, city; F. E. DeWitt, Washington, and M. W. McKibbon, Liscomb.

TAYLOR, N. D.—The stockholders of the People's Telephone Co. at a recent meeting elected the following officers: Henry Mason, president; P. J. McGraw, vice-president; Cornelius Williams, secretary; F. H. Hutchinson, treasurer; directors, Knute Stanger, J. B. Waters, Fred Deeken, Erland Paulson, S. L. Price. Arrangements were also made for the continuance of the construction of the new rural lines for which a $5,000 bond was voted. About one year ago Taylor had no telephones except a long distance telephone, but now has a local exchange and about 100 miles or rural telephone lines. The system was inaugurated by S. L. Price in August, 1909.

MT. VERNON, OHIO.—At the annual meeting of the stockholders of the Millersburg, Wooster & Orrville Telephone Co., held in Millersburg, Mr. H. H. Strauss of Orrville was elected a member of the board of directors to fill the vacancy caused by the death of Dwight E. Sapp of Mt. Vernon. Mr. Frank L. Beam of Mt. Vernon was elected vice president of the company.

MISCELLANEOUS.

SANTA ROSA, CAL.—The Clear Lake Consolidated Telephone Company, recently organized, has completed arrangements, it is reported, for the issuance of $300,000 bonds. The lines, property and franchises of the Clear Lake Telephone & Telegraph Company, operating in Clear Lake, Mendocino and Napa counties; Northwestern Telephone and Telegraph Company, operating in the Sonoma valley; Gold Ridge Improvement Company, operating in the Gold Ridge section, will be taken over by this company. Many additional lines, it is reported, will be built. Fred L. Wright is secretary and general manager.

SPICELAND, IND.—The Spiceland Telephone Co. suffered damage to the extent of $200 through fire destroying cables.

DEERWOOD, MINN.—A deal was consummated recently whereby the Bay Lake and Deerwood Telephone Co., was consolidated with the Aitkin Telephone Co.

BATTLE CREEK, NEB.—The Battle Creek Telephone Co. suffered damage to its lines and inconvenience to its service by the destruction of a great number of its poles, cut down by unknown parties. The wire was also completely destroyed.

WATONGA, OKLA.—Service on local and rural telephone lines here was cut off for several days by a fire in the telephone exchange. The whole interior of the office was badly damaged and the switchboard was put out of business.

AMARILLO, TEX.—Fire destroyed the building of the North Texas Telephone and Supply Co. this morning at Canyon, eighteen miles south of Amarillo. Horace Gouch, manager of the company, states that the loss approximates $2,000, partially insured. The fire originated from a defective flue. The switchboard and other apparatus was torn from the building and was reset in another structure almost immediately and operations resumed.

NORTH YAKIMA, WASH.—Manuel Bros., of North Yakima and Minneapolis, have purchased the Yakima Valley Telephone Co. The following officers will direct the company: President and superintendent, S. K. Bartholomew; vice president, M. H. Manuel; treasurer, H. W. Manuel; Attorney A. M. Murfin, of Minneapolis, secretary. The new company proposes to install extensive improvements at once, several carloads of material having been ordered. The company has exchanges in Wapato, Toppenish, Granger, Grandview, Mabton, Sunnyside and Zillah, and it is proposed to enter this city some time this fall. The company's head office, President Manuel says, will be established in Grandview, and the former name will be retained.

WRIGHTSTOWN, WIS.—The newly organized Mutual Telephone Co., recently organized by the farmers along the proposed route between Wrightstown and Askeaton, has made arrangements to connect with the Fox River Valley Telephone Co. at Wrightstown. The officers are: Morris Summers, president; Frank Summers, secretary and treasurer; John L. Sullivan, general manager.

MONTREAL, CAN.—The Canadian Pacific Railroad will install two more telephone circuits for train dispatching. The new circuits will be from Toronto to London, 115 miles, and from London to Port Burwell and St. Mary's, 114 miles.

LISBON, PORTUGAL.—The only recognized telephone company of Portugal is the Anglo-Portuguese Telephone Company, an English concern both as to its capital and its chief employees. It employs about 250 persons, and the company has 23 exchanges, the two principal offices being at Lisbon and Oporto. Between these two cities there is a trunk line, owned by the Portuguese Government, but operated by the company, which is responsible to the State for the payment of 500 reis (about 50 cents United States currency) per call from either of said cities to the other. The Government itself controls and operates all of the wires which run to or are connected with the forts, etc. It also owns the exchanges at Setubal, Figueira da Foz, and Braga. There are no party wires in the city of Lisbon, but there are extensions used in the same house, for each of which $15 is the yearly charge. The rates for telephones are determined by distances from the nearest exchange.

It is understood that the Anglo-Portuguese Telephone Company has a concession for all telephone rights in Portugal, except those retained by the Government for its own purposes. There are about 2,500 subscribers in Lisbon. In Oporto there are about 1,100.

MALAGA, SPAIN.—Only three cities in the district of Malaga have public telephone systems, Malaga, Granada, and Almeria, all three systems owned by private parties. The population and number of telephones in the three cities are as follows:

Malaga, a population of 131,300, with 342 telephones; Granada a population of 75,000, with 200 telephones; Almeria, with a population of 47,000, with 116 telephones.

CONSUL EDWARD J. NORTON reports that the telephone systems in this part of Spain are not extending very rapidly, and there is little opportunity for American equipment, but supplies and accessories, chiefly wire, cables, insulators and insulating material, house wires, etc., might be introduced in limited quantities.

UNDERGROUND.

SAN ANGELO, TEX.—The San Angelo Telephone Co. is preparing to put in underground conduits to carry wires sufficient for 25,000 telephones.

School Demands Connection with New York Telephone Company.

The public service commission has received a complaint from the State Agricultural and Industrial School located at Industry, Monroe county, N Y., against the New York Telephone company, asking that the commission make an order compelling the company to make a connection between the Scottsville central office and the private telephone system of the school. The institution is provided with a private telephone system and the New York Telephone company has refused to connect this system with the Scottsville exchange. The complaint has been served upon the company and an answer required within ten days.

Auburn Telephone Company Issues First Mortgage Gold Bonds.

The public service commission has approved an issue of $200,000 worth of five per cent consolidated first mortgage gold bonds of the Auburn Telephone company at Auburn, N. Y. The bonds are issued to retire outstanding bonds and may be issued in exchange for the old ones at par. This is the first capitalization issue approved by the commission since the new law placing telephone companies under its jurisdiction went into effect Sept. 1.

Alertness demands thoughtfulness. Without care in our every action we will fall into habits that are certain to be costly to ourselves and others.

In the Rural Line Districts

C. H. Parker, superintendent of the Butler County Telephone Company, has returned from a motorcycle trip to Andover, Augusta and other points in southern Butler.—*El Dorado* (Kansas) *Times.*

The members of Sylvia and Hayes townships own their own telephone line, having a rural system. They recently organized a company and bought out the old line connecting with the Sylvia exchange. John Scott, secretary of the company, was in the city today looking after supplies for the system. Mr. Scott and family visited over night with Mr. and Mrs. T. B. Totten.—*Hutchinson* (Kansas) *News.*

Chas. Dalton has resigned his position here as manager of the local telephone exchange and Ed Vanpelt has been secured in his place. Miss Frankie Dickson is assisting him at the switchboard.—*Randlett* (Okla.) *Enterpise.*

Telephone proprietor Elmer Tilton is getting out some telephone cards which give the name of every subscriber, the line he is on and the ring. This will be a great convenience for the public.—*Quinter* (Kansas) *Advocate.*

The Farmers' Union has made a strike on the Fisher Telephone Company here and ordered their telephones taken out. They wanted them cut to 75 cents per month and night service with 5 cents exchange at Newport and the company would not do it, so they ordered their boxes taken out.—Grubbs' Correspondence in *Newport* (Ark.) *Independent.*

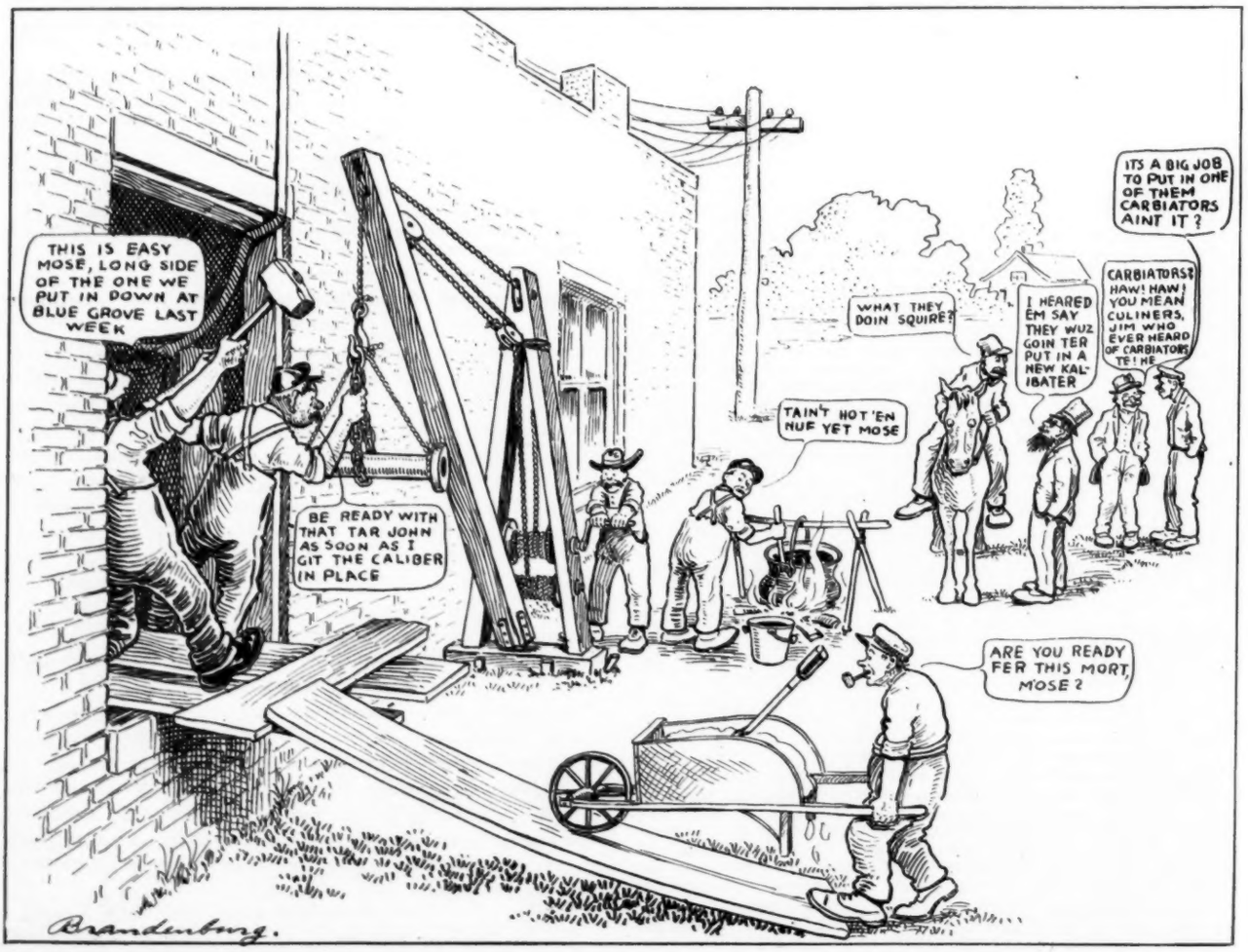
T. W. Ward is having a telephone line put up along and through the Forest farm property. The contract was let Tuesday evening and Wednesday the "Barb Wire Telegraph Company," of Lovells, were on the ground with a few of their men. The line was surveyed by E. S. Houghton, who is acting as construction engineer for the "Barbed Wire Telegraph Company." Before noon Thursday the poles were all set from Lovells to Mr. Ward's mansion. The B. W. T. Co. are pushers, grass wont grow under their feet. The construction engineer has set the poles in a straight line. Ed says if a job is worth doing it should be done right. That is a good motto.—*Grayling* (Mo.) *Avalanche.*

Work on the telephone line between Windsor and Kendall is finished all but putting in telephones.—Windsor Letter in *Lakin* (Kansas) *Advocate.*

The Standard Telephone crew were over Sunday visitors at their homes at Waukon.—*Elkader* (Ia.) *Argus.*

A. W. Geyman, manager of the Deer Creek Mutual Telephone Company, is a great base ball player, but he drew the line on playing on Decoration Day.—*Arapaho* (Okla.) *Bee.*

Mrs. Theus, who has been operator at the office of the Independent Telephone Company, will leave for Tennessee Sunday on a visit to her parents. She will stop at Kansas City for a few days' visit with her sister. Miss Sarah Roofe will act in her place during her absence.—*Pleasant Hill* (Mo.) *Local.*


THIS IS EASY MOSE, LONG SIDE OF THE ONE WE PUT IN DOWN AT BLUE GROVE LAST WEEK
BE READY WITH THAT TAR JOHN AS SOON AS I GIT THE CALIBER IN PLACE
TAIN'T HOT 'EN NUF YET MOSE
WHAT THEY DOIN SQUIRE?
I HEARED EM SAY THEY WUZ GOIN TER PUT IN A NEW KALIBATER
ITS A BIG JOB TO PUT IN ONE OF THEM CARBIATORS AINT IT?
CARBIATORS? HAW! HAW! YOU MEAN CULINERS, JIM WHO EVER HEARD OF CARBIATORS TE! HE
ARE YOU READY FER THIS MORT, MOSE?
Brandenburg.

J. Mose McClure put in new caliber at the Farmers' Telephone office last week, the old caliber having been damaged by the lightning.—*Eldora, Iowa, News Item.*